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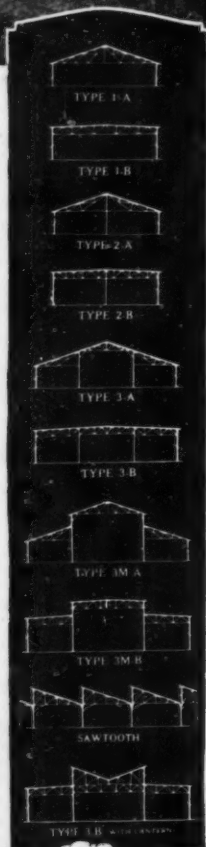
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Just What Would You Do?

A mine explosion occurred in the Allan Mine in Nova Scotia mysteriously. No one to this day knows why. But whatever the cause, the mine had to be sealed, for the rock falls, which were many, precluded direct fighting. An account of the recovery work will appear in next week's issue.

The problem is, Where should they have sealed the mine, just short of the first fall or near the shaft? A second explosion occurred. Should they have utilized the favorable conditions thus created for erecting a tight stopping as was done at the Horning Mine, in Pennsylvania, or did they do well to retreat and shut off both shafts? Is it advisable to retreat to the shaft, where air locks are difficult to make and leakage likely? These are matters worthy of consideration. You may have to solve them in a hurry sometime as they did at Stellarton, and you should have your mind ready for the occasion if not entirely made up.

High Prices Killed the Market

High prices, that made the consumer economize somewhat against his will, have wrought havoc in the coal industry. F. G. Tryson shows next week what a crimp it has put in the consumption of fuels. But is it a permanent wave or only a crimp? That is being answered by the surprising record shown every week in the production charts.

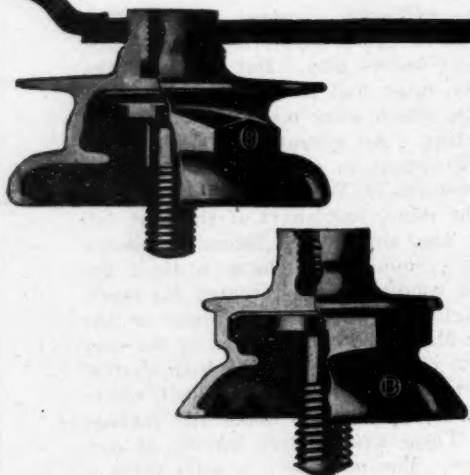
Work Without Sweat

Look over the Underground Stories and Editorials this week. The ideas are a little startling. Our American coal mines are usually a little too cold to sit in without a coat, but metal mines are often so hot that men can hardly work in them. Some form of refrigeration may be possible, a cooling of the men if not of the mine. That will be another use for coal. British coal mines are often hot, the men work in "brecks," and refrigeration may come before long.

Storm Clouds in Mines

Perhaps mine lightning is not wholly a chimera and, if it is an actual reality, we should know it and guard against it.

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 30

NEW YORK, AUGUST 12, 1926

Number 7

The Nova Scotia Experiment

THE BRITISH Empire Steel Corporation officials came to the United States, looked the mines of this country over and went back and followed British precedent. Frankly we are disappointed, for surely the methods of the United States are less revolutionary than those of Great Britain, which involve maintaining roads in broken ground rather than in solid coal.

It is true that conditions in most of the mines of the United States are not on all fours with those in Nova Scotia. For the most part the long face work and longwall work done here is at relatively shallow depths. Certainly the V-system is not well suited to heavy cover, but there is absolutely nothing to suggest that the longwall retreating method of the United States is not better than the longwall advancing method that the Nova Scotia engineers are adopting. However, the engineers of the United States are to be congratulated on having available on this continent examples of longwall advancing at great depth that they can study if the British Empire Steel Corporation permits. They will be able to learn from this example just what possibilities of economic operation it affords.

It would have been well to have maintained solid blocks of coal adjacent to the "deeps," or slopes, 500 or 1,000 ft. wide so that these roadways might be kept relatively inviolate for the passage of trips and air. The Illinois method of driving entry, with two pairs of headings but modified so as to give a somewhat larger central pillar than is now customary, would seem worthy of imitation. It would seem that the engineers in charge in Nova Scotia have been led to believe that because British conditions are closer to Nova Scotia conditions than to those of the United States, British precedent should be followed. That all depends on the suitability of British practice to British needs. It is not by any means sure that it is well suited.

The United States has been ready to follow the best in British practice, but its engineers feel that a complete acceptance of such methods will not solve its problems as well as a careful culling of the best. In a few years perhaps the United States will have mines that will prove whether its eclectic methods are based on true principles. The Nova Scotians apparently believe that the engineers of the United States have not *proved* that their methods have been correctly chosen, at least in deep workings.

In that, they are undoubtedly right, but it is still nevertheless true, that though it is not proved that they are correct methods it has, by no means, been proved that they are incorrect, and until they are so proved, they are surely worthy of cautious adaptation. The troubles incident to longwall advancing have been proved conclusively, and we wonder that the Nova Scotians are willing to face them so boldly without at least trying methods that on their face seem likely to avoid them.

Nova Scotian engineers feel doubtless that, in following precedents, which have been recognized as desirable in deep seams, they are relieving the weight of their responsibility. If the methods prove undesirable, they can declare that they had many examples justifying the experiment, whereas if they had adapted the principles of others to new conditions they would have had less justification. That is a way of shifting responsibility that many of us are prone to adopt, but at the same time, in engineering, the blind following of precedent and of the call of the kin is not the part of wisdom. Precedent must be examined courageously, and methods should not be accepted merely out of respect to their country of origin, however long they may have had acceptance in that country. Some British engineers are disposed to break away from tradition, laying their roadways in solid coal and not in broken ground.

Mine Lightning

LIGHTNING originates from the friction of the air and the high voltages therefrom resulting. What is to prevent an air blast from a roof fall or a discharge of dust by a blowout in a coal seam, which may project even tons of fine dust into the air, from creating a similar high voltage and a lightning discharge that will ignite methane and thus coal dust—or even coal dust in the absence of methane? Experiments are being made on this possibility by the Safety in Mines Research Board of Great Britain.

Outbursts of dust have occurred in Scotland and British Columbia, as *Coal Age* has duly reported. Air blasts are distressingly common in India. In one a rail was driven through a woman who was working in the mine at the time. One recently occurred in a Glen Alden mine, and they are by no means uncommon. Renewed efforts to guard against them would be made if it were realized that they might cause explosions. In some mines there is now absolutely no fear of air blasts as no injury or damage has been traced to them.

The two Bellevue mine disasters in British Columbia, and the Maindy disaster in South Wales may have been due not so much to mechanical sparks as to an electric discharge like lightning. The Adrian explosion of 1911 and the Allan mine disaster of 1924, which both occurred without apparent human agency may have had some such origin. The subject is one of great importance and we are glad it is receiving the attention of Mr. Blacktin working under the direction of R. V. Wheeler.

A closing thought—Does not a discharge of steam in the mine lead to some such electrical phenomenon? Ordinarily lightning has been alleged—and the evidence seems good—to have entered the mines and caused explosions, why should not electrostatic conditions generated within the mine have exactly the same result?

Safety with Progress

EVERY NEW development has been accompanied by hazard. Even the introduction of the steam engine was no exception. James Watt was seriously perturbed by the monster which he himself had created. He was greatly alarmed to find that some reckless persons were disposed to increase steam pressures considerably above the atmospheric. He, cautious soul, was disposed to rely almost entirely on the vacuum caused by condensation, but men like Trevithick, Hornblower, Evans and Woolf wished to use high pressures, 50 and 120 lb. per square inch. To James Watt such boiler pressures seemed murderous. He advocated the passage of an act of Parliament to limit them drastically. As locomotives used high pressures, he put, it is said, in one of his leases, a provision that no steam-carriage should be allowed to approach the house, the use of which he was conveying. Fortunately his advice and example though heeded were not in the end followed. Had they been, the progress of civilization would have been checked.

Yet it was excusable for him to fear that the boiler tenders would let their safety valves get out of condition and would allow the water to get low so that fire would burn the boiler. It was easy to keep the safety valve in condition and to watch the water gage. It was not difficult to put a gage on the boiler to show the pressure. But there was always the fear that these devices would be overlooked, and a terrible accident result. He was right; such accidents could and did happen; but disasters of this kind are now rare, though pressures are far higher. Boiler tenders have learned to watch these dangers. They have become expert in handling boilers. Gages and even charts are read painstakingly, and accidents are relatively few.

The steam engineer has become accustomed to 200 and 300 lb. pressure and much higher pressures are being introduced. At the Weymouth, formerly the Edgar, Station of the Boston Electric Co., 1,200-lb. pressure is used and the Milwaukee Electric Light & Power Co., at the Lakeside addition in Milwaukee generates steam at 1,300 lb. One large plant in Bavaria, Germany, is using 1,600 lb., and experiments are being made with 3,200 lb.

It is interesting to note that the British were for many years disposed to use low-pressure steam. The influence of Evans in the United States made high-pressure steam for many years a distinguishing mark of American practice.

Not a single important development has been made in equipment without some people—experts like Watt—fearing the consequences. The locomotive, even when it traveled at only 29 miles per hour, the automobile, the oil and gas engine, the steamship, the airplane, all alike were condemned in turn, but mankind went fearfully but perseveringly ahead, meeting the dangers with suitable provisions. Industry sought to find safety not so much by continuing old practices which always had their own elements of hazard but by providing safeguards against the dangers inherent in new development. When fears, real or imaginary, are allowed too greatly to interfere with new methods and mechanisms, progress is strangled.

Watt, the father of steam engineering, did much to hinder the progress of the technique he had created, showing that even experts and men interested in the promotion of progress may give undue weight to their fears and hold back the advance of the arts, and fur-

thermore may overlook the dangers of present equipment because accidents from these are no longer new and startling, for with deaths from accident as with deaths from crime, too often only the dramatic and unusual cases receive the attention of the expert and inexperienced alike. In consequence the public begins to believe that primitive ways are safe and new ways dangerous. For instance, could transportation by stage coaches in England have been conducted for a year without a fatality to a passenger? Yet that has often been the railroad record since the dangerous steam carriage was introduced.

Mine Refrigeration as a Source of Coal Market

MUCH COMMENT was made in England recently on the experiment at the St. John del Rey mine, Brazil, into the conditioning of the workings by refrigeration with a plant using 700-hp. of electrical energy. Now the British Government itself is making tests.

The St. John del Rey plant really did little to cool the air, for the walls of the roadways and shafts warmed it so that it was only 8 deg. cooler by reason of the refrigeration. The temperature was still 93 deg. F. But the moisture was reduced 12 per cent and that brought the wet-bulb thermometer down 9 deg. F., and the experiment was a success. A feeling of oppression gave way to relative comfort.

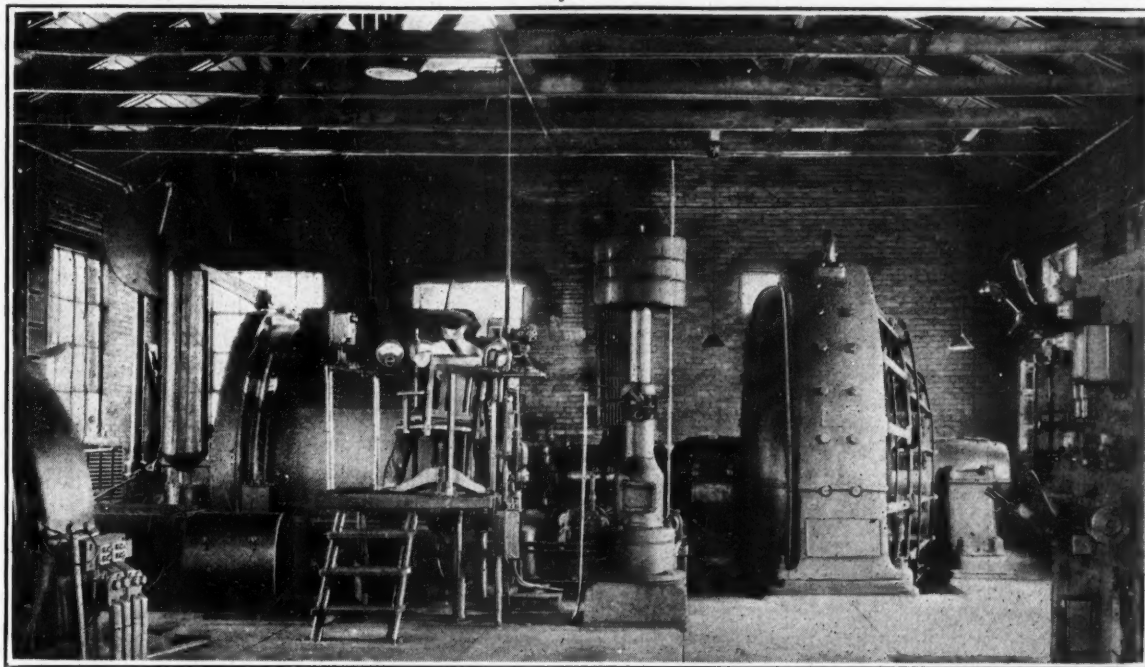
The British Government officials, however, feel that the cooling should be local and even hope that something may be done to provide refrigeration plants near the face in hot coal mines. Experiments are being made into this possibility, regarding which and the St. John del Rey plant some further information is given in this week's "Underground Problems."

In this connection, W. Hancock is making, for the Safety in Mines Research Bureau of Great Britain, an inquiry into the possibility of using in mines, with high temperature and humidity, a cooling device consisting of a light perforated tube to be worn around the waist beneath the clothing. A small injector is attached to the tube and by the use of about 1 cu.ft. of compressed air per minute about 50 cu.ft. of air is drawn in and blown about the body of the wearer. With stethoscope, microphone, a four-valve amplifier and a siphon recorder, tests have been made to measure its physiological effect in high temperatures.

With mines as deep as one in the Kolar gold field of India which, in recent years, has reached 6,140 ft. below the surface, as the City Deep Limited that was planned for 7,000 ft., as Tamarack No. 6 that was 5,308 ft. deep and 4,100 ft. below sea level, there is room for refrigeration. The Anaconda Copper Mining Co. was reported a year or so back to be making inquiries and experiments into the possibilities of increasing comfort and efficiency by the use of artificially cooled air.

All forms of refrigeration furnish a market for coal. Those who see no chance for an expansion in the coal market overlook too often what a large market air cooling of all sorts will afford.

Here it may be added that the experiments in the use of ice for cooling the air which the Safety in Mines Research Board are making seem to be foredoomed to failure. The authorities of the Department of Public Buildings and Grounds in Washington some time ago tried to cool the White House with ice and found the plan prohibitively expensive.



Ingenious Control Devices Save Power and Labor At Valier Coal Company's Mines

Power Demand Held to Predetermined Maximum, by Manipulating Hoist as Load Governor—Company's Clock on Circuit with Utilities' Demand Meter and Timer—Automatic Pump Control Obviates Attendance

By A. F. Brosky

Assistant Editor, *Coal Age*, Pittsburgh, Pa.

AS A RULE when production is curtailed the costs mount. That this need not always be the case, however, has been proved at the Valier mine of the Valier Coal Co., located in southern Illinois, for economies in certain phases of mine operation can be effected under those very circumstances. A notable example is a power-saving arrangement which governs the manipulation of the main hoist while the plant is being operated at 75 per cent of its capacity.

Valier is a shaft mine working the No. 6 Illinois bed. The coal is hoisted in skips, and the workings are equipped to produce 8,000 tons in 8 hr. At one time this mine held the world's record for production from a single shaft, and on individual days during this period it produced more than its rated capacity. At present, however, it is turning out about 6,000 tons per working day in accordance with a policy of curtailed production.

The hoist shown in the headpiece is installed at the main shaft of the Valier mine. It is driven by a 1,350-hp. direct-current motor from a flywheel motor-generator set. Its control is semi-automatic.

Power is furnished to this mine on a contract by which a primary charge is made on a 5-min. maximum demand and a secondary charge rendered on actual consumption of energy. With the mine operating at only 75 per cent of its capacity, a 15-min. period of grace in each hour allows an adjustment in the speed of hoisting which limits the load on the entire plant to a fixed maximum. Though other phases of operation have been rebalanced to meet the general requirements of curtailed production, the main hoist is also being so controlled as to act like a balancer or flywheel to limit the overall load on the plant.

This has been accomplished by installing on the hoist platform a demand meter and a 5-min. clock, both of which are synchronized with the clock of the power company. They are placed in front of the operative who, by watching their indications, can regulate the hoisting cycles in such a way as to attain the desired end. The general arrangement of these devices on the hoist platform is illustrated in Fig. 1.

The main shaft is 600

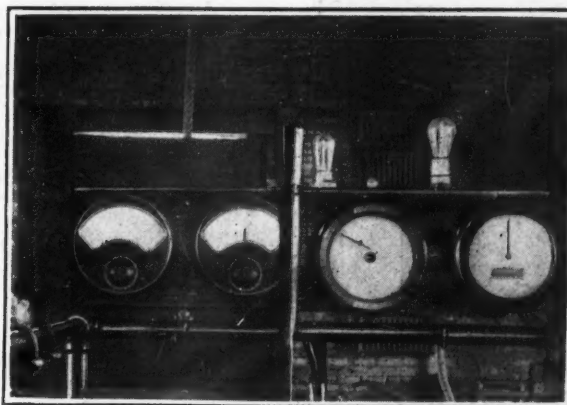


Fig. 1—Recording Instruments on Hoist Platform

From left to right these instruments are: An ammeter, a voltmeter, a demand meter, or indicator, and a 5-min. clock. The two last-mentioned are in synchronism with the demand meter of the power company. By watching them the hoistman can regulate the speed of hoisting so as to keep the overall plant demand below a predetermined maximum. The left-hand lamp above the meters is flashed at the end of every 5-min. period by the demand meter of the power company, at which time the demand meter here shown is automatically synchronized. The tiny lamp between the larger ones and a similar lamp at the auxiliary hoist flash when the limit of maximum demand is closely approached. This signal warns the hoist operatives, the one at the main shaft in particular, to be on the alert so as not to over-run the demand limit. The lamp on the right is used as a dumping signal.

ft. deep, and each skip has a capacity of 15 tons. The hoist is driven by a 1,350-hp. direct-current motor drawing energy from a flywheel, motor-generator set which forms part of an Ilgner system of Ward-Leonard control. This latter machine is itself semi-automatically governed. When necessary the hoisting load is decreased or eliminated entirely by slowing up or stopping the hoist so as to maintain the total plant load at or below the predetermined maximum which happens to be 2,300 kw. The running load of the hoist is about 1,100 kw.

In order to insure measurements of the same time interval on both the demand meter of the coal company and that of the public utility furnishing current, the latter was requested to replace its spring-driven clock with one that is actuated by a synchronous motor. This was done, the clock of the power company being now placed in a common circuit with the demand meter and timer installed by the coal company. All this regulating equipment is driven by Warren synchronous motors.

A light circuit from the clock of the power company flashes a lamp on the hoist platform at the end of each 5-min. period. The coal company's demand indicator and timer are synchronized with the clock of the power company by the throwing of a switch upon the flash of this lamp.

The demand indicator in conjunction with the clock on the hoist platform shows the hoistman what the overall demand of the plant is at all times. A circle

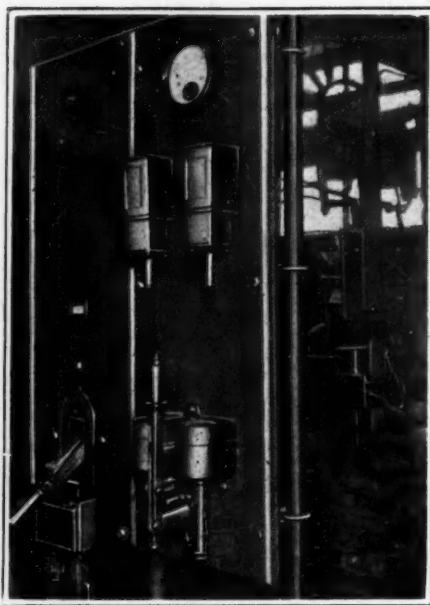


Fig. 2—Control Equipment in Substation

This shows the two end panels of a switchboard that automatically control a pumping station located a mile away. On the extreme end panel are two reclosing overload relays and an oil circuit breaker installed in a circuit that is utilized in starting the pump manually should the automatic-control features fail to function. Behind this panel are the current transformers and an overload relay controlling the water-treating plant.

indicate the wide possibility of savings in power by the installation of hoisting equipment of greater capacity than that of the mine itself. The larger equipment also would provide a margin for maintaining efficiency should a plant exceed the output for which it is designed.

Another saving, in this case in labor, is being effected through the installation of a dually-controlled isolated pumping station that delivers water from a reservoir to the plant. A water-treating installation is operated in conjunction with this pumping equipment. Should the automatic features fail, the whole system can be operated through manual control.

At the mine substation, power is stepped down from 33,000 to 2,300 volts and enters the building through a three-pole, fused, entrance switch. Thence it is conducted to an eight-pole, double-throw switch, on one side of which, but located at the pumping station, is an automatic starter. This energizes a 20-hp. induction motor driving a triplex plunger pump of 300 g.p.m. capacity.

The control circuit of the automatic starter is operated by the combination of a water-pressure gage with an electrical relay, this latter being likewise installed at the pump station. Coupled with the last-mentioned equipment is a balancing tank that dampens the effect of pressure surges upon the gage. This pressure-controlled relay equipment was furnished by the Industrial Controller Co. The relay and gage act jointly to operate the starter when the back pressure in the water line reaches either an upper or a lower limit.

In case the automatic-control features should fail, which they rarely do, the eight-pole switch can be thrown to a manual-control circuit containing a three-pole contactor with reclosing overload relays. The pumping equipment can then be manually operated.

Not only is this equipment automatic but it keeps the tank full of treated water at all times—something which cannot be attained with manual control.

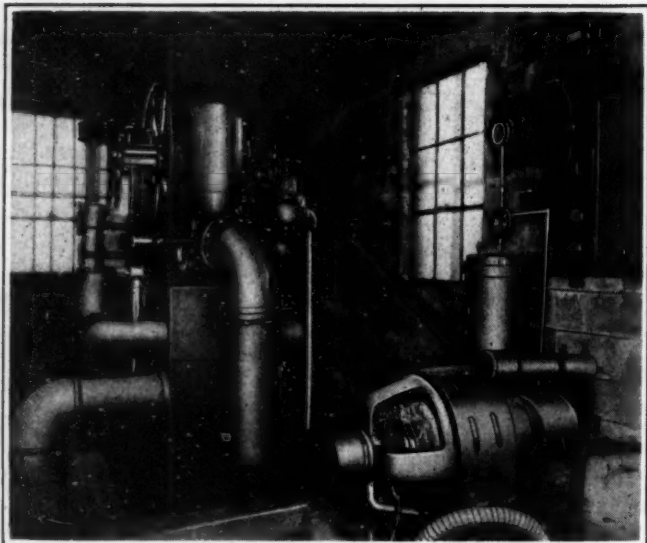


Fig. 3—Equipment at the Pumping Station

Showing pump and automatic equipment controlling it. On the wall in the right foreground is shown the equipment that initiates automatic starting or stopping. This is a combination of a pressure gage and an electric relay. Should the back pressure from the tank at the mine reach a predetermined high or a low limit, the relay breaks or makes a circuit to the automatic motor-starter. The upper gage operates the relay. The lower one is installed merely to check the readings on the upper. Below them is the balancing tank which dampens the effect of pressure surges upon the gages.

Nova Scotia Mines Adopt Longwall Advancing

Made Necessary by About 1,400 Ft. of Cover—Coal Over Five Feet Thick and Less Than Six—Hand Pick and Loading Methods in One Section and Machine Cutting and Conveyors in Another

By J. J. McDougall

District Superintendent, British Empire Steel Corporation,
Glace Bay, N. S.

THE SYDNEY MINES coal district lies between Sydney harbor and the little entrance to the Bras d'Or Lakes, occupying an area of about 10 sq.mi. According to Richard Brown this area contains five workable seams of coal, varying in thickness from 3 to 6 ft. They are known as Cranberry Head, Lloyd's Cove, Sydney Main, Indian Cove and Stony. Princess and Florence collieries work the Sydney Main seam and Jubilee colliery taps the Indian Cove and the Stony, these being known usually, as Jubilee Upper and Lower, respectively.

The Jubilee mine for reasons, which will be given later, is at present standing idle, but it is being pumped and ventilated. The Princess colliery which has been operated for about fifty years, is considered one of the oldest and most extensive in the province, the distance from the face to the shaft being approximately 2½ miles, nearly all of which is under the sea.

The Florence mine, though opened only in May, 1902, on account of its more restricted rise area, has been developed more rapidly to the dip than the Princess, and the face of the slope is now some two miles from the mouth. Unlike Princess, Florence is a slope mine, the main slope having been driven practically on the true dip into submarine areas about 2½ miles west of Princess colliery. The object of this article is to explain why longwall methods were adopted in these mines and what results have been obtained.

LONGWALL SOON A CENTENARIAN

Before dealing with the adoption of the longwall method of mining in this district and relating the results, it would be well to first refer briefly to this "system" in a general way, as its application in the Cape Breton coal field is of only a few years' duration. When the longwall method of mining was first introduced is somewhat uncertain, but it is certain that it was worked in the thinner seams of Derbyshire and Nottinghamshire before the year 1850, and in South Yorkshire between the years 1860 and 1870. The thickness of the Barnsley bed in Yorkshire delayed its development in that field for years, for there was doubt as to its applicability to such thick coal, but eventually the system was adopted and worked successfully.

About 1870, the question of the relative value of longwall and room-and-pillar methods was a live issue in the Midland mining societies, and a controversy arose between two groups of engineers, as to the merits of the two systems. One group led by Philip Cooper, who hailed from the north country, favored the continuation of pillar-and-stall, and the other, from Nottinghamshire and Derbyshire, led by G. Fowler, advocated the longwall system.

Article read before Mining Society of Nova Scotia, Baddeck, C. B., June, 1926, and published in Transactions of Canadian Institute of Mining and Metallurgy.

Apparently the thickness of cover, in the proposals under discussion, favored Mr. Fowler, because the Denaby colliery which tapped the Barnsley bed at a depth of 1,350 ft. (with 10 ft. 2 in. of coal) was developed shortly afterwards on the longwall system, and has been successfully operated by that method ever since. The method of developing longwall, about that time, was by "straight work," that is, the levels were driven with pillars between them, and the longwall planned so as not to interfere with these pillars.

About 1892, the Cadeby colliery was opened on the Barnsley seam, and it was at this mine that the practice originated of taking out all the coal, except the shaft pillars. Since that time numerous similar projects have been planned. Some mining engineers have gone further and have advocated the removal of all coal, including the shaft pillars, but this does not seem to be a wise procedure, except in thin seams that are hydraulically stowed.

LONGWALL OF MANY KINDS

The longwall method of mining may be divided into two classes—longwall retreating and longwall advancing—each admitting of many modifications. The much talked of "V" system is one of the many methods of "retreating" longwall. The "Research Committee on Timbering in South Wales" classify the systems of "advancing" longwall in that district as follows:

"Ordinary," which is employed where the seams are too thin or the roof too bad to allow the large cars or "boxes" to travel along the face. "Barry," which is used in thicker seams where the cars can travel along the face, and the roof is fairly strong; also "Conveyor" longwall, which is an extension of the Barry system, but permits the gateways or stalls to be spaced further apart, the coal being carried from the face between gateways by means of conveyors.

The report of the South Wales Committee also points out that the use of conveyors is extending, especially in thin seams, and that they are effectively worked in the thicker seams where the roof is strong. The following quotation is illuminating: "The straight line of face, regular working, and more rapid advancement of the face under the 'Barry' and 'Conveyor' methods of work, tend to better roof control, and we advocate their adoption wherever practicable."

Again, Caleb Parnely, in his excellent work the *Colliery Manager's Handbook* makes the following statement concerning longwall:

"The advantages of working longwall where it is applicable, are, a better yield of large coal, less injury to upper seams as the intermediate strata settle gradually, simplicity of working, ease of ventilation, and greater economy, for the superincumbent weight reduces the labor of 'holing' [undercutting]. These advantages

are so manifest as to indicate the desirability of working all seams of usual thickness, situated 600 ft. or more below the surface, on the longwall system. There are many modifications of the longwall method and one of its merits is that it is more readily capable of being varied to suit local conditions than the room-and-pillar system."

LONGWALL SPARES UPPER SEAM

Though authorities do not all agree on the effect of subsidence on upper seams, it is certain that the lower seam at the Jubilee colliery, Sydney Mines, was operated by the longwall method without having any apparent effect upon the upper seam, which was only 182 ft. above it. If this could be successfully accomplished with both seams operating, as was the case at the Jubilee mine, it should follow that the upper seam would be less disturbed from subsidence if undeveloped.

The foregoing plainly shows the advantages of the longwall method wherever its application is considered feasible, and I would add that though the longwall system is usually adopted in thin seams it is also found advantageous in thick beds where the overburden strata are so heavy that the maintenance of roadways in rooms and the extraction of pillars add materially to the cost of production.

Heavy maintenance cost would result from any one of the following causes or possibly from a combination of them: Soft roof falling heavily and necessitating extensive timbering, bumps in rooms where the roof and floor are hard or heaving roadways due to soft bottom.

It is a fact that nearly all coal mined in Europe today is being extracted by the longwall method and the adoption of that system under suitable conditions, is advocated by all recognized mining authorities in Great Britain.

In Cape Breton, the longwall system was practically unknown in practice until a serious attempt was made at Sydney Mines, some seven or eight years ago, to establish it in the lower seam at Jubilee colliery. It is true that ill-planned trials had been made at various times and places, but this was the first that met with success. In this seam, with a cover of 700 ft., the management selected the longwall method rather because of the thinness of the seam, than because that method would assist in holding the roof. This mine if worked by the room-and-pillar method would have an unusually high mining cost, as the brushing of the roof to the height necessary for transportation, would be excessive.

Experience proved that, by applying conveyors to the longwall method of working the coal could be mined at reasonable cost as long as the thickness of the seam remained 3 ft. or over. Unfortunately the coal thinned to 1 ft. 10 in. on the north, and 1 ft. 8 in. on the south side, a condition which prevented successful operation.

FLORENCE HAS BETTER COAL

Boreholes, and other indications on the property, showed from 3 to 4 ft. 6 in. of coal to the dip, north and south of the shaft. Thus indications point to the presence of thicker coal and further developments will doubtless be made when the coal market warrants it.

The coal in the submarine workings on the north side of Florence colliery thins out in some cases to between 3 and 4 ft. in thickness. For this reason a machine and conveyor longwall system was started as an experiment on the lower section of the No. 14 north level, in October, 1923.

As the cover at this point was only 670 ft. and the coal at times increased in thickness to 5 ft., it was deemed expedient in the interest of safety, to abandon the project for fear of subsidence, after six months of successful operations. It is the intention, however, to develop longwall exclusively on the new lifts of Nos. 16 north and south sections in this mine, with a cover of 800 ft., the depth at which pillar drawing was adopted at Princess mine, Sydney Mines.

Though the longwall method with conveyors was successfully worked at both Florence and Jubilee collieries, as these operations were temporarily abandoned, it would not be advisable to dwell on the methods employed.

Princess colliery commenced hoisting coal in the year 1876. The shafts, two in number, 682 ft. deep, tap the Sydney main seam at a thickness of 5 ft. 9 in. The shafts are at Cranberry Head on the northern side of Sydney harbor, and the present workings are all under-sea. This seam has been mined to the rise for many years, and it was the exhaustion of the coal in the rise area which necessitated the sinking of the Princess mine to gain access to the coal in this great undersea area.

SOFT FLOOR MADE LONGWALL NECESSARY

At a cover of 800 ft. pillars could still be extracted, so the room-and-pillar system continued. When a cover of 1,200 ft. was reached it was found that the soft bottom made it quite difficult to maintain the roadways. Previous to this the roof, consisting of hard coarse sandstone, was exceptionally good and gave no trouble.

A short distance below No. 8 landing, however, shale made its appearance directly above the coal, being thin at first but increasing to such an extent that at No. 9 level, 800 ft. farther to the dip, the thickness of the shale between sandstone and coal was 8 ft. A soft bottom was indeed a serious difficulty, but the additional trouble caused by the shale, which usually broke clean to the sandstone, was a continual worry and expense. It compelled the narrowing of the rooms and the enlarging of the pillars, causing much loss of coal in pillar extraction.

In fact, in a short time, pillar work resolved itself into continuous slabbing cuts, instead of regular extraction, and often, when the pillar was reduced to a long thin stump it was lost, so that there was an increasing loss of coal, and as a result, an additional cost of mining.

SOUTH-SIDE DEVELOPMENT

It was then decided to give longwall a trial, and in September, 1922, at the face of No. 10½ south level, with from 5 ft. 6 in. to 5 ft. 9 in. of coal, and a cover of 1,350 ft., a small-scale start was made by driving down a slant, at about 45 deg. from the level, and starting two gateways. As this slant was not well packed, it was soon found that it would have to be abandoned. A new slant properly brushed and packed was opened to replace the first, and the two gateways continued, the coal from them being drawn up the new slant.

Though this experiment was on a small scale, it was promising enough to inspire further effort, and a headway was started uphill in the solid coal. The roof, however, began to give trouble on the outby part of the levels, and the low level, which was not so well timbered as the main level, became so full of fallen rock that it interfered with ventilation, making it compulsory to drive down from No. 10 level in order to complete

the driving of this headway from level to level.

As the headway advanced it was widened from 10 to 32 ft., and along the ribs two rows of wood-packs were set 10 ft. apart, the nearest being 10 ft. from the outer side; the 10 ft. of space between packs was brushed and stone filled in and around the packs. From this brushed headway, gateways, 8 ft. wide in the clear were broken off on 60-ft. centers.

As this was to be hand-pick work it was essential to make the 'holing' or mining, as easy as possible, and as the cleat of the coal was at an angle of 35 deg. off the line of headway, it was necessary to carry the lower end of the wall ahead to allow the face to be on the cleat of the coal.

The main level was brushed 10 ft. wide and 4 ft. high, with wood-packs 6x6 ft. filled with stone and built at 12-ft. centers, on both low and high sides. Behind these packs, about 6 ft. of stone was built in, making about a 12-ft. building between the roadway and the gob. The space between the packs was also built in with stone.

In the gateways, which were 8 ft. wide and broken off the headway at 60-ft. centers, about 3½ ft. of rock was brushed, and wood-packs at about 12-ft. centers were built. The brushing was filled into the packs and was used to build in between them and to the gob side. The headways, or cross-gates, were carried 10 ft. wide and brushed 4 ft. high, and in every detail were similar to the main level.

LONG HEADWAYS EXPENSIVE

The first two headways were broken off 250 ft. apart, but the intermittent work of last summer demonstrated clearly that if broken time was to continue, the distance between these headings would have to be shortened considerably to avoid back brushing. It was also discovered that, on both the headways and levels, the 4-ft. brushing did not give sufficient height, so this had to be increased to 5 ft.

When this section was sufficiently advanced, a headway was started on No. 10 level under exactly the same conditions as described for the No. 10½ level. Up to the present seven gateways have been broken off in this section and the faces sufficiently advanced to bring them in line with those from No. 10½. This has provided a face line approximately 1,400 ft. long, beginning 150 ft. below No. 10½ level and extending, approximately, 450 ft. above No. 10 level.

From this face (when fully extended to approximately 2,100 ft.) will be mined all the coal between Nos. 10½ and 9 levels. At present it is 1,400 ft. long with a triangular shaped gob, the base of which is 800 ft. along the main No. 10½ level.

The "settlement" has been quite regular and comparatively easy to control. It is, of course, more easily controlled when work is steady. Measurements taken

along the main level show a settlement of 3 ft. at a distance of 30 ft. from where the wall first started, and 3 ft. 9 in. 20 ft. further in. From this point to within 250 ft. of the face the level shows a settlement of between 3 ft. 6 in. and 3 ft. 9 in. becoming gradually uniformly less towards the face. Measurements taken midway and parallel to Nos. 10 and 10½ levels show a subsidence of from 3 ft. 4 in. to 3 ft. 9 in. to within 150 ft. of the face.

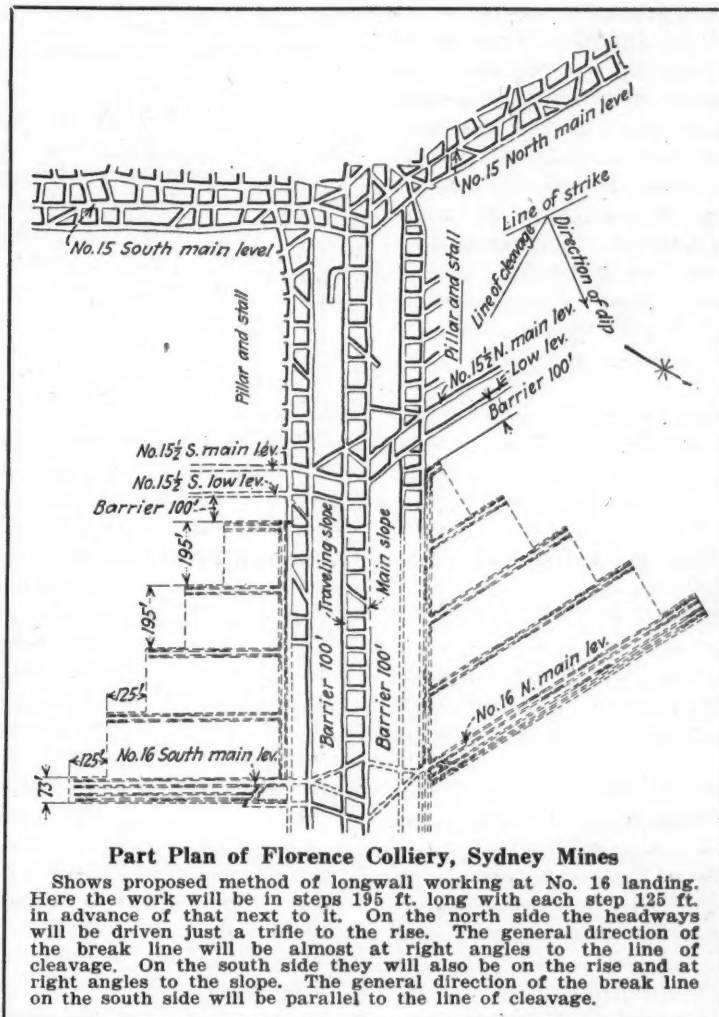
As would be expected the effect of weight is greater in the middle part of the gob, and, from measurements taken in different places, the subsidence throughout amounts to approximately 64 per cent, that is, the pressure has squeezed the packwalls so that they now measure only 36 per cent of their original height.

Gateways are at 60-ft. centers, and 35 ft. of coal is allotted to the high side and 25 ft. to the low side of each gate. Packs

are carried as close as possible to the face, and the road is laid up and down the hill so as to place the cars in the most convenient place for loading, which at times is 35 ft. from the center of the gateway. But in order to avoid too wide a space between the packwall and the face, arrangements are made to remove all coal from the high side and to build the pack where the road has turned up, before commencing to load coal from the low side. If the face is worked steadily this will not require much close attention.

Between the gateways, two rows of hardwood chocks, 2 ft. square, at 12-ft. centers on the dip and 6-ft. centers on the strike, protect the face and help to break off the roof. In addition, the miners erect much timber for their own protection. These chocks and timber are drawn with the aid of a prop puller, and no timber is left in the gob. Occasionally a prop cannot be drawn and it is accordingly weakened by cutting. However, since commencing these operations only two hardwood chocks have been lost in the gob.

When the mine works steadily the face advances about 9 ft. per week, and at this rate a face-track can be



Part Plan of Florence Colliery, Sydney Mines

Shows proposed method of longwall working at No. 16 landing. Here the work will be in steps 195 ft. long with each step 125 ft. in advance of that next to it. On the north side the headways will be driven just a trifle to the rise. The general direction of the break line will be almost at right angles to the line of cleavage. On the south side they will also be on the rise and at right angles to the slope. The general direction of the break line on the south side will be parallel to the line of cleavage.

carried with plates at the gateways; but with intermittent work the loss of the face through falls, would eliminate this advantage. Also, with steady work, the face does not show the breaks which occur from subsidence in the gob, but with broken time they are plainly seen. They are about 4 ft. apart and require to be closely watched, for as might be expected, they interfere with operations.

It must be remembered that the foregoing describes a hand-pick longwall face, and it would be well at this juncture to deal with some of the difficulties experienced. The greatest difficulty has been in the failure of the men to follow instructions closely. This, to a large extent, is due to their inexperience with the new methods, and it has been a double trial to be starting a new method and training men at the same time. It has been difficult to insure that packs were built on the proper line of sights, and, as a consequence, the brushing and gateways have not been kept straight, thus throwing unequal weight on the strata directly above the packs, causing them to spall and block the roadways.

RIB WALLS SHOULD NOT OVERHANG

Brushers require to be impressed with the importance of carrying rib walls with as little crown as possible, for when these walls are allowed to overhang, the weight on the packs is uneven and they break and roll down on the roadway.

It might be well to explain that before the road is

brushed the distance between the roof of the gateway and the floor is the full height of the coal; the new roof for the gateway is usually from 9 to 10 ft. above the floor. This gives an excellent roomy appearance so much so that it is hard to make the brusher believe or realize that, in the course of a few months, the settlement will have converted the sides of the brushing into the ribs of the gateway, and thus reduced the height to about 6 ft. It is then that faulty brushing becomes apparent.

GOOD WORK SHOULD BE DONE ON BACK

The building of stone into packwalls is another difficulty. Little trouble is found in getting the men to build the outside wall, that is, the wall along the gate, but it is difficult to make them realize the necessity of packwalls on the gob side of the building. If these are not built properly the settlement is not even and the pack is likely to be pushed out into the gateway, especially on the high side.

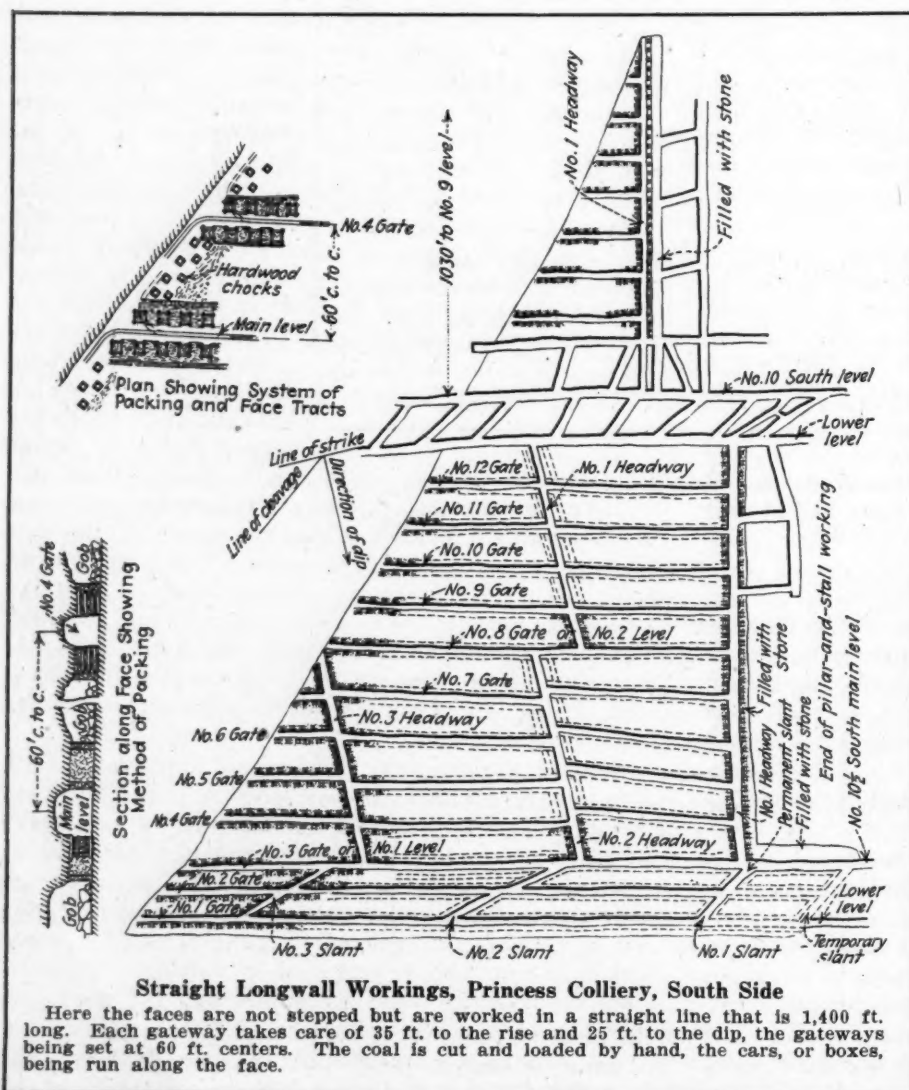
Men, in some cases, do not realize that all timber must be removed from the gob, believing that disabling the timber is just as good. Though disablement is better, by far, than allowing timbers to remain erect, props may still cause damage by elbowing out any part of the wall with which they come in contact.

Again, the fact that our miners are familiar with the room-and-pillar method in which each shift has its own tally and consequently mines only sufficient coal for that shift does not lead to the best results. This fact interferes with both shifts taking advantage of the roof weight in mining their coal. If not carefully watched the men will gouge portions of the face and leave points on other portions, causing the wall to set and making the cutting more difficult. This also leads to uneven settlement of the roof which should be allowed to bend and settle in one unbroken section. It may be stated, without fear of contradiction, that a hand-pick longwall face cannot be operated to the best advantage without the adoption of the one-tally system.

NORTH-SIDE DEVELOPMENT

It having been shown that the longwall method, so far as the roof and local conditions generally, were concerned, was suited to the conditions obtaining, it was decided to develop the north side of this mine. But in order to get better results, it was decided to use machines for cutting and conveyors for loading out the coal.

In October, 1924, work was commenced on the opening of the longwall face at No. 10½ north section, with a thickness of coal of from 5 to 5 ft. 6 in. and a cover of 1,400 ft. This level was formerly driven about 2,000 ft. in from the present main slope. Because of proposed changes in the center line of this



slope for the extraction of coal farther to the dip, practically no mining was done to the rise of this level and no connection was made between it and No. 10 level north; the ventilation being carried in at the low level and out at the main level.

In order to undertake further development work near the face of this level, a counter-level had to be driven, as the roof of the low level had fallen so badly that ventilation was hampered. After this was completed a pair of headways were driven up to the No. 10 level. Of these the inbye was the one from which the longwall was to be started. After they had been driven through, though they had been propped along the center all the way, the roof sagged between 8 and 12 in., breaking the booms all the way along.

To protect the longwall headway it was decided to breast up on the inside of this headway to a width of 26 ft. in order to bring the headway packs and the headway under the new roof. It was believed that the spring had been relieved by the driving up of the headway and by keeping the packs and brushing close to the face, no further break in the roof would occur.

STOWED OPENING WITH ROCK

The headway was driven 430 ft. up through to the low level of No. 10 north, and when finished gave an opening 36 ft. wide, including 4 ft. clearance on the inbye side for the conveyor pans, 6 ft. of pack filling the rest of the original headway, and the rest of the space stowed with stone from brushing and packed to form a cushion. Much care was taken to avoid the usual difficulty encountered at the edge of the pillar when starting longwall. In the meantime a temporary slant was driven down hill a distance of 75 ft. and coal breasted in, chocks being built at 12-ft. centers down the slant.

At this time bottom brushing was commenced 80 ft. outside of the new longwall, and as coal was breasted in from this temporary slant, the stone from the brushing was stowed in the 'want,' filling the gob completely, excepting a 10-ft. opening at the lower end which was brushed and connected back through the solid coal to the old lower level.

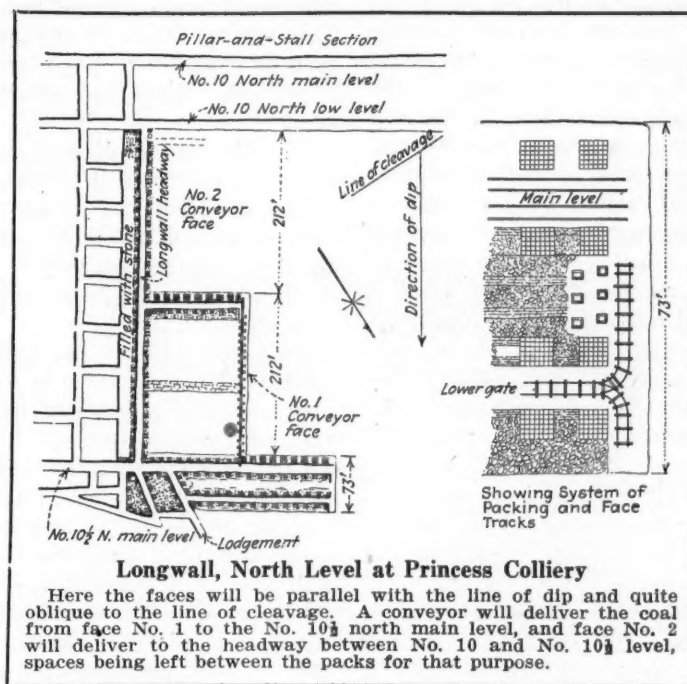
Forty feet inside the new headway a permanent slant was driven, approximately 90 ft. down-hill, the lower end being carried into solid coal, forming a sump to take the water from this area. From this slant a gate was broken off at 40-ft. centers, below the main level, the intention being to carry this gate in with the main level, making provision for a gateway and level packs on a face 73 ft. long, this face to be carried about 125 ft. ahead of the first, or No. 1, conveyor wall.

While this driving was going ahead, the main level was being bottom brushed to the face. The bottom

brushing is between 2½ and 3 ft. deep, and, from experience on the south side, it will be necessary to take approximately 2½ ft. of roof brushing to give the necessary height on the main level. It is the intention to carry the bottom brushing in with the mining on the main level, but the top brushing will be carried about

6 ft. in advance of the conveyor wall. Thus the stone from bottom brushing will be utilized in the low-side packs and the top stone in the high-side packs, which can be filled only after the conveyor has passed.

Along the main level the coal has been taken out 16 ft. on the high-side and the packs built with faces 6 ft. from the center of the level, thus providing a 12-ft. opening. These packs will be built 6x4 ft. with 4 ft. between them. It is through this 4-ft. opening that the conveyor-pans will deliver coal on the main level, and this distance, it will be noted, provides for a 4-ft. cut and the moving



of pans forward toward the coal every second cut.

The first, or No. 1 wall, will be 212 ft. long and will be carried about 125 ft. in advance of No. 2 wall, which will be of similar length. At the upper end of No. 1 wall a gateway or level will be carried 10 ft. wide between packs, bottom-brushed and in every way similar to the main level. This will serve for taking timber into No. 1 wall, and also will serve as an escape road for the No. 1 face and for taking coal from the No. 2 wall. At the upper end of No. 2 wall a similar level will be driven, but with a width of only 8 ft. between packs. This gate will serve for taking timber into No. 2 wall, also as an escape road and return airway, as the low level in No. 10 north will no doubt close with the advance of the longwall.

As already stated each conveyor wall will be 212 ft. long. Taking from this length the space occupied by the gateway, or level at the upper end, approximately 180 ft. remains between packs. This would seem to be a long span between the permanent buildings, but stone packs 12 ft. wide will be erected and continued about midway, and kept within 12 ft. of the face. The object of this building, which will consist of stone taken from the gob, is to assist in roof control.

It is true that there are longer faces at Jubilee and that this center wall is not provided, but the coal is much thinner and the 'falling stone' even when thrown back haphazard, was sufficient to assist in roof control. The height is much greater at Princess, hence the necessity for the building of packwalls just described.

The face will be protected by two rows of hardwood chocks built of 6x6-in. square timber 2 ft. long. In one tier of each chock the timber will be placed so that it will not be directly under the one above; this will facilitate the work of drawing. There will be also at least 2 in. of soft wood on the top of each chock to

provide a cushion for roof movement. The miners will be expected to timber sufficiently to assure their own safety.

There will be approximately twenty such chocks, in two rows, on each 212-ft. face. The rows will be placed at 6-ft. centers but this distance will vary to suit conveyor conditions, for example, after the first cut has been taken off, the rear row of chocks will be drawn and placed between the conveyor and the face, and the distance between the rows will vary with conditions as the face progresses. Care will be taken to "stagger" the chocks, that is, to place them so that those in one row will directly face the intervening spaces in the other.

The object in carrying one face so far in advance of the other is to provide sufficient to go and come on in the event of one wall slowing up and not keeping in proper step, and also to form a stowage space or siding for the cars so that the conveyor may be kept going. Less distance would serve if it were possible to use turn-plates for the cars, but with 1½-ton cars turn-plates would be a hindrance, and it would be better to carry a back-switch so that cars could be placed under the conveyor without much effort.

WORK FOR ALL THREE SHIFTS

This length of face from No. 10½ north to No. 10, including the shortwall of 73 ft., and Nos. 1 and 2 walls (each 212 ft.) should give an approximate total daily output of 370 tons. When these walls are producing coal, the full wall production is expected, from each face in one 8-hr. shift. The next 8 hr. will be devoted to cutting, and the remaining 8 hr. to brushing, chock drawing, conveyor moving and preparing the face generally for the filling of coal on the following shift.

The cleaning of the face each day is essential to successful operation of a conveyor face. It is of the utmost importance that there be close co-operation between the men of each shift, so that all work, preliminary to the loading of coal, can be done promptly, and the roof allowed to settle before the coal-loading shift comes on.

Conveyors will be moved every second cut, that is, one of two conveyors will be moved each day. Although eventually the shortwall will be cut by a longwall machine, for the present it will be mined by radials, and the coal loaded in cars. The coal from No. 2 level will be lowered to the main level by an air-hoist, following the usual practice with such haulage.

In undercutting it is proposed to use the Turbinair longwall chain machines that did splendid work at Florence, cutting on an average 200 ft. of face in 6 hr.

It is intended to use conveyors of the shaker type made by the Diamond Coal Cutter Co. which are already used at Florence and Jubilee.

In conclusion it may be stated that although longwall work at Princess mine is as yet only in the development stage, the behavior of the hand-pack face, and the success achieved at Florence on the conveyor-face have proved that, although some minor changes may be necessary, coal can be so successfully mined by longwall that it will be feasible to change all the workings to that system, abandoning room-and-pillar methods entirely. This should reflect itself most favorably on costs. The success of the change from the room-and-pillar to the longwall method would appear to mean renewed life for this district, and it is all important that its execution be entered into whole-heartedly by all concerned.

Purchased Electric Power Supercedes Inefficient Power Plants

Speaking of the progress of the Appalachian Power Co. in building up its business with coal companies *Electrical World*, July 31 says. The big problem in those days was to get loads on the system. Nearly every mine had its own plant and was owned by a different individual. Most of the mine owners were practical men of affairs who knew little of their power costs and cared less. What they wanted was coal tonnage at least cost.

The selling job done to coal miners was less a business matter than it was a study in psychology and patience. Very few if any mine owners were sold on central-station power through the cold facts produced by an economic analysis in dollars and cents, because data were not available. Each job was an individual case of selling.

In some instances the mine plants wore out. At one mine the plant force used limbs of trees to keep stacks and breeching upright in order to impress the boss with the fact that repairs were in order. This was a psychological moment for the successful selling of central-station power. In other cases the local plant blew up and the utility served as a service pinch hitter. In still other instances the bother of operating a power plant was the chief element in causing the mine owner to buy power. Another amusing case occurred in which the mine plant force was too drunk to work the day after pay day and central-station power was bought to relieve this situation.

In this pioneering work an ingenious selling agent proved most effective. An old box car was fitted up as a portable substation. This was sent around to different mines on trial and after use for a few days or a month proved to the mine owners that the power from the lines was reliable. Again, this substation was a fine entering wedge as an emergency source of power. Any mine in trouble because of its own plant's failure could telephone the power company for help and out would roll the portable substation to give emergency service. Needless, to say, emergency service became permanent service in nearly each case.

The commercial drive for this mine load was successful and until about 1920, more than 65 per cent of the revenue came from this business. Of the four big coal regions, two are completely served by the utility and the other two are about 95 per cent served. A total of more than 70 large coal companies purchase all their power.

CARBON MONOXIDE deprives the blood of oxygen so that the former can no longer perform its duty of carrying oxygen to the tissues. "It has been asserted that carbon monoxide has a specific poisonous action on some tissues of the body, especially those of the nervous system, but there is little evidence in favor of this statement and much against it. Haggard and Henderson" says Dr. R. S. Sayers, of the U. S. Bureau of Mines, "found that there was no change in the rate of growth of chick brain tissue even when it was exposed to an atmosphere containing over 70 per cent carbon monoxide. Animals without red blood (hemoglobin) can live in atmospheres containing high concentrations of carbon monoxide without apparent harmful effects."

Coal Men You Should Know

J. J. Rutledge

TO A THOROUGH knowledge of the art of mining J. J. Rutledge joins an affable disposition that makes his companionship as much sought as his technical ability. Mr. Rutledge is never hurried, despite his crowded life of achievement. When addressed he is likely to preface his words with a smile that puts his questioner in entire good humor whether the temperature is torrid or below zero. This information is as freely and lucidly given as it is sedulously sought, for Mr. Rutledge is a man who has an open mind for all new development, and a judgment that is sound and covers an unusual range. He has training not only at college but as a manager, both of coal and metal mines, a technical correspondent, a geologist, a consulting engineer, a member of the Bureau of Mines, and latterly as an inspector. He fits well his present position which gives him an opportunity to use to the full in his many contacts the long and varied experience of his life.

Mr. Rutledge comes of coal-mining stock. His grandfather, William Rutledge, and his father, Walton Rutledge, both lived in County Durham, England. The latter came to this country when nineteen years of age and ultimately became secretary of the Miners' Benevolent Association embracing the

states of Illinois, Indiana and Missouri. He was active in promoting legislation providing for the inspection of mines and from 1883 almost to the close of his life was a state inspector.

J. J. Rutledge, the subject of these remarks, attended the University of Illinois from 1889 to 1894, graduating with the degree of bachelor of science in mining engineering in June of the latter year. He spent his vacations in mine surveying. After graduation he served as assistant mine manager for the Consolidated Coal Co., in Mine No. 6, Staunton, Ill. During part of the years 1895 and 1896 he was employed as mine manager by the Spaulding Coal Co., at Spaulding, Ill., and then from October, 1896, to February of the following year he traveled the coal fields for the *Engineering and Mining Journal*. From February, 1897, to June, 1899, he was mine manager of the Litchfield Mining & Power Co., and from that time until 1900 he was superintendent for the Wabash Coal Co., Dawson, Ill. Then following his bent for study he went from November, 1900, to June, 1904, to Johns Hopkins University, Bal-

timore, Md., to pursue post-graduate studies in geology, being employed as assistant geologist and mining engineer on the Maryland Geological Survey during a portion of the summer vacations. On completing his course he received from Johns Hopkins the Ph.D. degree in geology. From that time till April, 1909, he engaged in practice as a consulting mining engineer and geologist, traveling in the metal-mining regions of the United States, Canada and Mexico. Part of

this time he operated pyrite mines in Massachusetts, Canada and Virginia and zinc mines in Arkansas. Though by this time he was nearly lost to the coal industry, the Technological Branch of the U. S. Geological Survey brought him back in April, 1909 and he was with that branch when it blossomed into the U. S. Bureau of Mines. From 1909 to April, 1913, he was engaged in fighting mine fires, investigating the use of permissible explosives in coal mines and in co-operative work with the U. S. Geological Survey and the Mining Department of the University of Illinois. From April, 1913, to October, 1920, he was district mining engineer of the southwestern district, of the U. S. Bureau of Mines, at McAlester, Okla., with supervision of mining operations on the coal and asphalt lands of the Choctaw and Chickasaw Na-

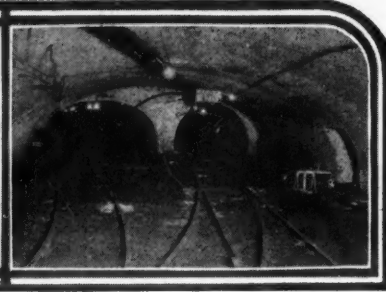


J. J. Rutledge

tions. Later, he became superintendent successively of the St. Louis and Urbana, (Ill.) Stations. Finally he was appointed by Governor Ritchie the first chief mining engineer of the Maryland Bureau of Mines, an appointment that was as creditable to that state as to the recipient of the honor. Commencing his term of office Oct. 1, 1922, he has held the position to the present date. He has organized the work of the Maryland Bureau of Mines. The state has wisely provided for his traveling to see the practice of other states, and during his term of office he has investigated a number of mine explosions. He has also studied new mining methods. Possessed of unusual powers, he has looked with favor on mining developments that he believes safe and efficient. He has experimented with cushioned shots and found them desirable. Maryland bids fair under his directing hand to advance rapidly in mining practice. Many technical publications of the U. S. Bureau of Mines came from his able pen. To few have been given such a broad field of mining activity and few, indeed, have put their opportunities to better use.



Underground Operation



Can Mines Be Cooled by Refrigeration?

Experiments in British Coal Mines Have Unfavorable Results—Local Cooling Advocated—St. John del Rey Gold Mine Has Been Cooled by Refrigeration Since 1922

Where mines go to great depth and so have strata of high temperature or where large quantities of readily oxidizable coal are produced in their operation, the temperature may be so great as to interfere seriously with the health, comfort and efficiency of mine workers.

The Safety Mines Research Board, of Great Britain, concerned rather with safety and comfort than with efficiency, is making inquiries into this subject, the experiments being conducted by J. Ivon Graham, W. Hancock and J. P. Rees under the direction of R. V. Wheeler.

These investigations are of two kinds, (1) into the possibility of cooling and drying the air by local refrigeration and (2) into the desirability of increasing the velocity of the air locally by subsidiary fans and other means.

Local refrigeration tests have been made with a semi-portable carbon-dioxide refrigeration plant driven by compressed air and requiring approximately 7 hp. for its operation. This plant was first installed in a Staffordshire shaft mine in a district where the return air was nearly saturated at 81 deg. F. Because the distance traveled by the cooled air before reaching the face was too long, the conditions at the face were not substantially improved.

The plant was then installed in a deep Lancashire mine in a district where the average face temperatures were 100.5 deg. dry bulb and 85.5 deg. wet bulb. Here the plant was installed within 150 ft. of the face, and the cooled air led in metal pipes to within a few yards of the workers. In this case the plant was even less effective than before, mainly because of the great reduction in temperature necessary to bring the air to the dew point. Only a small quantity of moisture was removed from the air

and moreover the metal air pipes rapidly conducted heat from the strata to the cooled air in the pipes.

The investigators concluded that to be of real value the machine must be greatly increased in capacity and must be sectionalized so as to permit of installation at the coal face. During the present year the cooling and dehumidifying of warm moist air by means of ice will be tried.

AN ARTIFICIALLY COOLED MINE

In this connection it might be well to give some facts from the paper by Thomas T. Read delivered before the New York Section of the American Institute of Mining and Metallurgical Engineers about the refrigeration plant at the St. John del Rey Gold mine in Brazil which is possibly the deepest mine in the world and which at that time had reached a depth of 6,726 ft. This mine is usually entered, however, by an adit 324 ft. below the top of the "shaft" making the depth, as thus measured, about 6,400 ft. Furthermore, the "shaft" is really not a single descent but one open shaft and a series of four blind shafts or winzes connected by adits, so that the descent is made not vertically but by a series of steps making a total lift to reach the bottom of the H shaft 6,100 ft. and the total horizontal distance traveled 6,430 ft.

The refrigerating plant which was put into operation, April, 1922, is a large one. It has a maximum capacity for heat extraction of 100,600 B.t.u. per minute which corresponds to the cooling of 5,040 lb. of air per minute from 72 deg. F. wet bulb to 43 deg. F. saturated. It uses 700 hp. of electric energy. The mine is ventilated by two 200-hp. Sirocco fans, one of which is at the 4,000-ft. level and serves as a booster.

The mine is relatively small and is

quite dry, all the water being sent up in small tank cars and of these only sixty are hoisted daily. No water comes in below the 4,600 ft. level, and all the water for drilling is sent down in cars. The average temperature of the air entering the mine was 68 deg. F. but by refrigeration this has been reduced to 42 deg.

Air entering at that temperature would be raised to 77 deg. by the time it reached a depth of 6,426 ft. due to adiabatic compression consequent on the greater pressure. As a matter of fact, the temperature is actually 98 deg. F. due to the heat the air absorbs from the walls of the shafts and adits.

The temperature of the rock at a depth of 6,426 ft. was 117 deg. F. and, at the 6,126-ft. level, 107 deg. F. By refrigeration the air temperature is lowered on the latter level from 101 deg. to 93 deg. F. and the moisture content from 153 to 87 grains per pound of air.

GAVE MEN COMFORT

On this basis 94 per cent of the work done in extracting moisture by the cooling plant is effective at the 6,126-ft. level but only 23½ per cent of the work done in cooling the air remains available. The air has about 12 per cent less humidity and about 9 deg. F. lower wet-bulb temperature. That seems a small result, but it is enough to make conditions that were almost unbearable quite satisfactory.

All this could not be achieved with the present equipment if the mine were large and were not kept small by continuous refilling with disintegrated rock from the surface and if the mine were not so dry that the depletion of the water in the air is not restored by evaporation. The conditions at St. John del Rey mine are, therefore, not typical of mines in general, and refrigeration was attempted only because the limits of endurance of the human body were being reached with increasing depth. The ore body is only 10x35 ft. wide in cross section, and the mine depth increases 150 ft. per year.

What Equipment Should Be Maintained For Fighting Mine Fires?

Compressed-Air Lines Used in Anthracite Mines to Take Water to Fire—Also in Two Bituminous Operations—Dust Can Be Blown Through Water Pipes to Fire

An inquiry sent out by J. T. Ryan, of the Mines Safety Appliances Co., to mine operators and engineers, regarding the equipment that should be installed and available for fighting mine fires brought out the following replies which were presented at the American Mining Congress convention at Cincinnati.

Of five anthracite engineers who responded, four recommended the use of the portable type of fire extinguishers. One would add a chemical engine to his equipment and another would rely on the chemical engine alone. Four, also, would use water, either forced through compressed-air lines or fed through pipes laid for that special purpose.

NO TOOLS TO BE HUNTED

Two lists of equipment may be quoted. One lists hose, with fittings to suit, fire extinguishers with extra charges available; tools, such as picks, ax, shovel and hammer, saw, nails and drill. He adds: "Because of conditions we are forced to place air-lines in nearly every workable section of the mine and for this reason arrange what we term a 'cut-in' on the surface with the fresh-water lines. In the event of a fire we are able quickly to turn water into all lines and by so doing what might be considered a fire line is available in all sections of our mines."

Another would provide a chemical engine and fire truck and tank, each mounted on a separate mine truck. The chemical engine should consist of two 90-gal. soda-and-acid tanks with 300 ft. of $\frac{1}{2}$ -in. hose. The truck is intended to carry another 250 ft. of hose, extra soda containers, axes, picks, shovels, bars and special bushings that will fit all sizes of pipe used in the mines and make connections with standard hose.

"The tank should be of 450-gal. capacity with a hand pump for filling it or for discharging it to the chemical engine. Fire extinguishers of 1-gal. carbon-tetrachloride and $2\frac{1}{2}$ -gal. special soda-and-acid types should be a part of this equipment."

Four of the bituminous mines report that little or no fire-fighting equipment is kept inside the mine. Twenty-nine others use water from

pipe lines installed either for that purpose, for drainage purposes or for sprinkling coal dust. Two can convert air lines into water lines, and several use pressure tanks and some barrels placed at strategic points.

Some operators who use water also recommend fire extinguishers or chemical engines or tanks. The tetrachloride type is used for electrical equipment. An interesting development is the use of rock dust which is distributed either by shovel or by machine. This is cited in eighteen cases. Sand is used for electrical fires.

In addition to this equipment for direct fire fighting, accessories such as brattice board, or cloth, brick or tile, cement, safety lamps, carbon-monoxide detectors and approved gas masks are recommended, these to be kept in properly maintained places underground. Two engineers advised the installation of tight doors to isolate any section of a mine from all others in case of an outbreak of fire.

WATER EVERYWHERE

One correspondent said that he recommended that water lines be laid along main haulage roads with connections to parallel entries through crosscuts or crosscut stoppings where hose may be attached. These are primarily for sprinkling, humidification and fire prevention, secondarily for fire fighting. All underground stables should be provided with automatic sprays or the flood system. Portable fire extinguishers of the acid-soda or foamite type may be placed at partings for use in rooms and the carbon-tetrachloride type for electrical equipment.

Another stated that all the mines of his company were piped to within 25 ft. of every working face and that all places kept open were piped with water under not less than 40-lb. pressure. Incipient fires are treated with water first. Plenty of brattice and timber are kept available. As the mine is rock-dusted, supplies of this dust are kept on hand which can be used by hand or, can be blown on the fire through the water pipes by the aid of stationary or portable air compressors.

Miner's Signature Indicates He Was Duly Notified

Occasionally a miner loses his life by deliberately trespassing upon an area, perhaps his own working place, which has been fenced off and posted as dangerous. Upon discovering bad top or an accumulation of gas in a place, a fireboss, of course, should notify the miner whose place is thus affected to keep out. Most miners heed such an order, but a few do not.

When a man is killed within a posted area the blame is too often shifted to the management. The accusation is that the management did not notify the miner or did not fence off the place. How easy it is for a miner to remove all traces of the so-called fence before he trespasses on the danger zone!

The Chicago, Wilmington & Franklin Coal Co. has established an iron-clad rule of its own which protects it from this "comeback." When an examiner finds a dangerous place he fills out a slip giving the exact location and nature of the danger and the check number of the miner who works in the place. The slip is handed to the lamp man, who attaches it to the designated lamp.

Before the lamp is released the miner to whom it is assigned must attach his signature to a statement on the slip to the effect that he has been duly notified of the danger in his place and has been warned to keep out of it until after that danger is removed.

May Explosions Be Caused by Mine-Generated Lightning?

Experiments are being made by the Safety in Mines Research Board to ascertain what electric charges are generated on particles of coal dust when they are whirled in air.

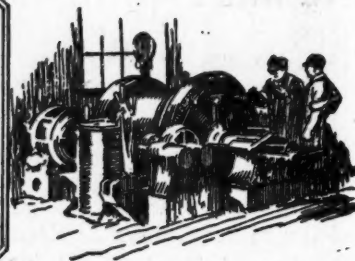
The electric charges generated on equal weights of different coal dusts and the weights of each coal dust required to cause potential differences have been measured with a view to the correlation of the inflammability of a coal dust with the electrical phenomena associated with it.

With one particular coal dust, the charge recorded by the voltmeter was approximately 6,000 volts. With voltages of this order, there seemed to be a distinct possibility that the self-electrification of the coal-dust particles would result in a discharge capable of igniting firedamp.

Sparks a few millimeters long have actually been obtained; but firedamp has not been ignited.



Practical Pointers For Electrical And Mechanical Men



Journal Boxes Are Rebuilt To Take Up Wear

A cause of much trouble with mine locomotives is the lateral movement of the axles which results when end thrust causes wear. The manufacturers have not given this feature sufficient consideration. In order to prevent excessive end play the journal boxes should be designed to compensate for wear.

The movement of a journal box up and down in its guides is similar to that of an engine crosshead in its guides. A point that has been overlooked is that it is necessary for

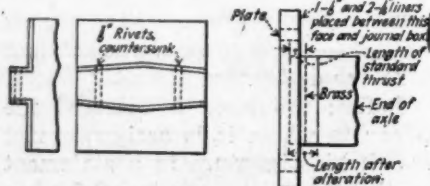


Fig. 1—Changes to Journal Box and Thrust

The two sketches at the left show the $\frac{1}{2}$ -in. wearing plates installed on the journal box after the wearing surfaces have been trued. At the right is the thrust plate and brass.

the journal box to overtravel as does the crosshead of an engine. By allowing overtravel, the guide wearing surface remains practically straight and therefore, with proper design, the guide can be moved closer to take up the wear.

The journal box wears only where it travels in the guides, and in consequence after a wear which reduces the weight about 6 per cent, the box must be scrapped if damage to the motors of the locomotive, is to be prevented. To provide the necessary

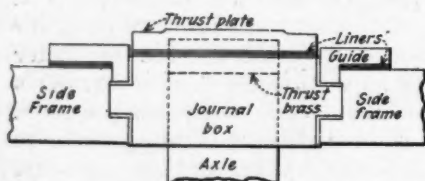


Fig. 2—Complete Assembly Using Liners

The three liners or shims under the guide, and the same number under the thrust plate, allow for taking up $\frac{1}{2}$ in. of wear at each end of the axle. Lateral play of axles is the cause of much motor trouble.

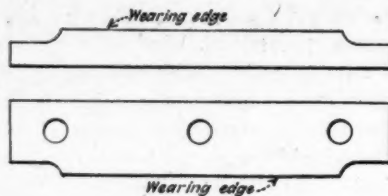


Fig. 3—Showing Shape of New Guide

The wearing edge is cut away at each end so as to allow the journal box to overtravel. This prevents the formation of high points at the ends, as normal wear takes place.

adjustment and to avoid scrapping 94 per cent of the original box the Pennsylvania Coal & Coke Corp. has made the changes hereafter described in the design of its journal boxes, guides, and thrust bearings.

When an original journal box has worn to the practical limit, instead of being scrapped it is sent to the shop and rebuilt to conform to our new design. The worn surfaces are machined to a true plane and $\frac{1}{4}$ -in. steel wearing plates attached with two $\frac{3}{8}$ -in. rivets in each. In our case the cost of doing this is half the cost of a new box. Successive renewals of the plates then cost only about one-sixth of the price of a new box.

The guides are made from steel angles, and at the point of wear allow a depth of a $\frac{1}{2}$ in. more than on factory-made guides. This permits the use of one $\frac{1}{2}$ -in. and two $\frac{1}{4}$ -in. liners which can be removed as is necessary to take up wear of the guides and box. The ends of the guide wearing-surfaces are cut away to allow the journal box to overtravel.

New thrust brasses are also made at the central shop. These are also $\frac{1}{2}$ in. thicker than the factory type, and under them are used the same number and size of liners as with the guides. The arrangement allows for taking up end wear to the amount of 1 in. before renewals are necessary, and the renewal costs are far less than with the original design.

J. F. MACWILLIAMS,
Electrical Engineer,
Pennsylvania Coal & Coke Corp.
Cresson, Pa.

Cooling of "Automatics" Is Important

Provision for proper ventilation should be the outstanding feature in the design of the foundation and building for an automatic substation. The fact that the equipment is unattended and is often in a remote location makes it impracticable to depend on open windows as a means of ventilation. The windows can be screened or barred to keep out intruders, but it is difficult to make provision to keep out rain.

A design commonly recommended and one which is quite practical is that of providing a good-sized duct from the outside to the pit under each machine and of having one or several rain-proof ventilators in the roof. The heat dissipated by the machine will cause a natural circulation which will vary in proportion to the difference in temperature between the outside air and the tem-



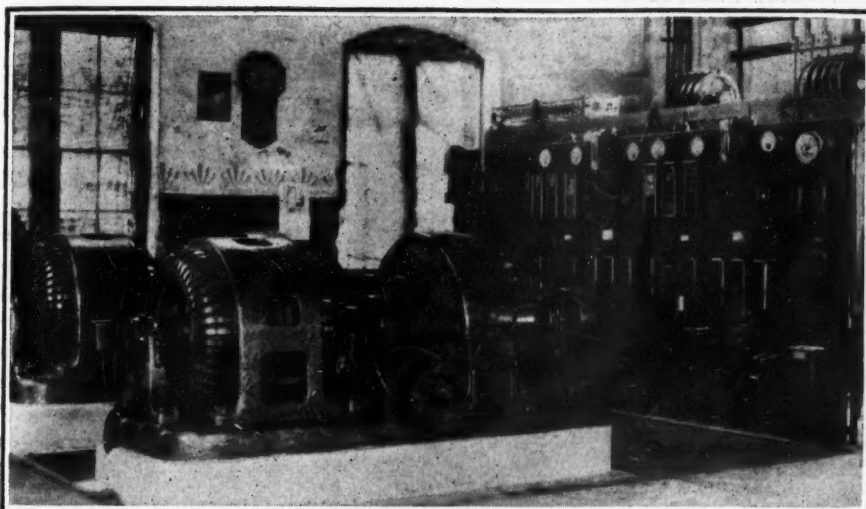
Operating with Open Windows

If a ventilator had been put in the roof and a duct through the side of foundation wall and opening into a pit under the machine, the windows of this automatic substation would not have to be left open exposing the machine to the chance of a wetting.

perature around and above the machine.

The duct should have a cross-sectional area of from 2 to 4 sq.ft.; should have a grating or heavy screen over the outside opening; and should be arranged so that there is little or no chance of its being filled with water from seepage, overflow or other source.

A good plan is to build the machine foundation with the top several feet above the ground level, and to carry the duct straight out from the



Substation with Carefully-Planned Ventilation

These motor-generators are cooled by a natural draft up through rain-proof ventilators in the roof. The pits in the center of the machine foundations are connected to the outside air by ducts under the floor, with openings just above the ground level.

pit so as to bring the opening in the wall or building foundation, several inches above the ground.

Two automatic substations of recent construction are shown in the accompanying photographs. That, of which the inside view is shown, is built with pit ventilating ducts and roof ventilators. The other, of which the outside view is shown, was built

with no provision for ventilation except the ordinary windows. The foundation is high enough above the ground to accommodate straight ducts from the outside into the machine pits. Trouble with certain of the relays during hot days made it necessary to leave the windows open regardless of the risk of rain entering and wetting the equipment.

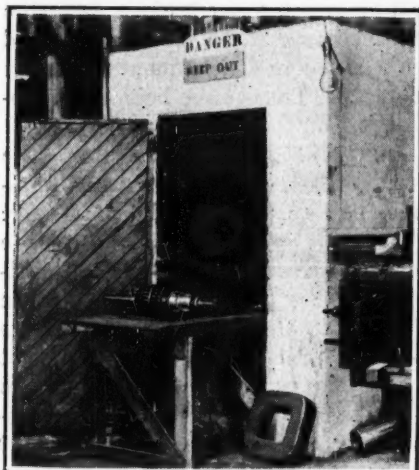
Folding Bench Facilitates Use of Baking Oven

Plans for a baking oven should include provision for an easy method of putting armatures in and taking them out when baked. When the oven is built with a side door, the common method is to provide a small car which is pushed inside the doorway on a narrow-gage track.

Another method which is less expensive to install is that used in

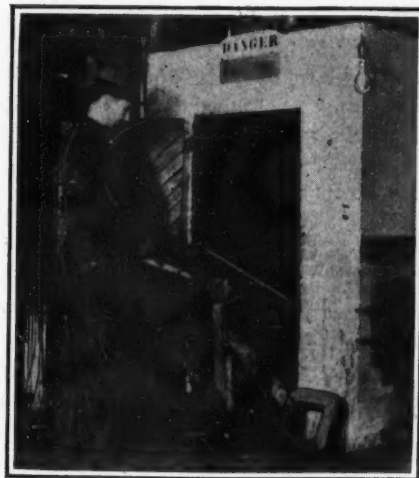
the Coaldale shop of the Edgewater Coal Co., near Hellier, Ky. This device consists of a bench with a folding extension at one end. When unfolded this part of the bench extends out through the door.

The armature to be baked is set



Armature Resting on Extension

From this position the armatures are rolled along the bench and into the oven. This makes the handling an easy matter and reduces the likelihood of damaging the armature.



Folding the Bench Extension

After the armature has been rolled into the oven, that part of the bench which extends through the door is folded back inside. The top is hinged at a point just inside the door and the outside leg is hinged to the folding section of the top.

on top of the extended portion of the bench and rolled along the top until it is inside the oven. The bench extension is then raised or folded to

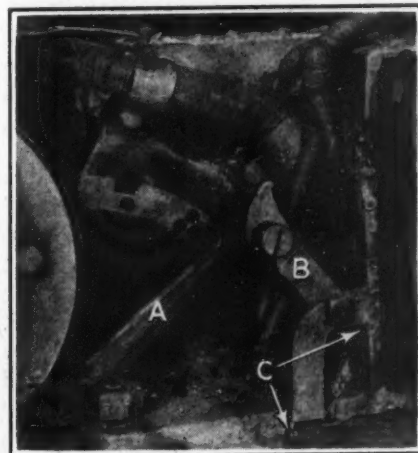
the inside so that the door can close.

The oven is made of brick and is heated by steam from the local generating plant. This is a most satisfactory method, because with it no moisture is formed and a heat regulator is not needed. The temperature of medium to low-pressure steam is a safe one for electrical insulation.

Latch Increases Safety of Mining Machine

Many serious accidents have been caused by the accidental starting of mining-machine cutter chains. In low coal where men ride the cutter bars when tramming machines of the under-cutting type, there should be some positive method to prevent accidental starting of the chain.

The illustration shows the type of safety catch which L. C. Gambill, chief electrician of the Glogora Coal Co., of Glo, Ky., has added to the shortwall machines at the Glo No. 1 mine. Although on this type of machine the clutch lever A is arranged so that it is in the "down" position when the chain is stopped, and a safety plug is provided for



Handle Held in "Off" Position

Before the latch B was added the clutch lever A would sometimes move up and engage the clutch that starts the cutter chain. The latch has been found more reliable than the safety plug formerly used.

inserting in a hole above it, Mr. Gambill has found that a latch like B is more reliable.

The base to which the latch is fastened has been attached to the machine by electric welds at the points C. The latch piece B is made slightly short so that the lever has to be sprung somewhat below its lowest position before the latch will engage. The clutch handle then springs back into the notch of the latch and is held securely. Since the type of latch described has been used, in no instance has a cutter chain started accidentally.

Viewpoints of Our Readers

Anthracite Counties Evaluate Contrary to State Law and Lay Excessive Assessments on Coal

In the issue of *Coal Age*, July 29, under the Pennsylvania classification in "News Items from Field and Trade," is a reference to the Luzerne County Commissioners seeking "a newer and more modern method of valuing coal lands for taxation purposes." It proceeds to relate that the Commissioners say that the present law prescribes an "obsolete and unsatisfactory method," of assessment and then declares that an endeavor is to be made to change the system.

No doubt the present method is unsatisfactory to the Luzerne County Commissioners and to many other public officers who desire to spend other people's money. For four years I have been actively interested in the subject of assessments, especially in Schuylkill and Northumberland counties and therefore have had a good opportunity to know the facts.

SATISFIED WITH LAW

The laws for valuing all kinds of real estate in Pennsylvania have been so satisfactory, on the whole, that they have not been altered since their passage some 80 or 85 years ago. They provide, in essence, that every piece of real estate shall be valued for county taxation triennially and that the basis of taxable valuation shall be the market value of the property, that is, what the property would actually bring if put up, at public sale after due public notice.

In other words, what a purchaser, who did not have to buy, would offer to a vendor, who did not have to sell, in competition with the general public. The words "public sale" are used in the statute and have never been amended.

It was the custom, at that time, to sell most real estate at public sale, for the genus "realtor" had not been developed. Some 15 years ago the legislature admitted the existence of changed customs and decreed that a daily transcript of real-estate transfers with the considerations should be certified by the recorders of deeds

to the taxing powers for guidance in determining the taxable value of the properties affected when assessment day arrived.

Incidentally, be it observed, there is no rule to tax property at its full actual value. The courts have always held that so long as uniformity is observed it is permissible to tax at any percentage of actual value.

JACKING UP TAXES

For many years, politicians in the coal counties have been aiming at the coal companies. Each triennial valuation saw coal properties marked up by the millions. For example, in the triennial assessment of 1913 the total valuation of coal properties in the seven principal anthracite counties was \$298,756,183, whereas in 1922 the value of these same properties was set at \$770,283,332, an increase of about 158 per cent in nine years.

At this point the big fight was staged, for the bulk of this increase had been laid in Schuylkill County. The coal-property valuation in those counties in 1919, had been about \$62,348,000. In 1922 it was returned as \$437,818,684, and this latter figure was said to be only 60 per cent of real value, as a 60 per cent ratio had been adopted. More than 300 appeals were at once taken, and the cases came to trial in October, 1923.

TAX BASIS 33 PER CENT

Judicious inquiry showed prior to the hearings that real estate other than coal lands, covering all Schuylkill County, was taxed on a basis of less than 33 per cent, rather than 60 per cent. The records of 2,100 real-estate transfers in 1921 showed that in 1922 this real estate was assessed at just a trifle over 32 per cent of the actual considerations paid. That forced the County Commissioners to back water, and before the cases were considered they said they would adopt a 45 per cent ratio for coal properties. That cut more than \$109,000,000 from the coal valuations.

The cases dragged to an almost interminable length. In every instance the county tried to justify its valuations by the testimony of engineers who based their figures on estimated coal content worth so much a ton in place. In short, these men assumed a certain tonnage in the ground; that it was worth so much a ton also in the ground, and from that they deduced values. One of them, W. F. Sekol, from Scranton, testified before a committee of the U. S. Senate that in Schuylkill County alone there were forty-four billion tons of coal—more than twice as much as the best engineers have estimated for the whole region, all fields.

SUPREME COURT LOWERS TAX

The first case decided went against the coal companies, and the valuations were upheld. The opinion of the court distinctly upheld the quantity method. The case was the Pennsylvania Company for Insurance on Lives and Granting Annuities, trustee under the will of William H. Kemble, vs Schuylkill County Commissioners. Early in May, 1924, the Supreme Court of Pennsylvania, on appeal, reversed the lower court. Later the Supreme Court reversed the lower court in two other cases where the valuations had been upheld. The game was dead, and the valuation of \$437,818,684, placed in 1922, was properly reduced to about \$80,000,000.

VALUED ABOVE SALE PRICE

One of the cases, in which the Supreme Court reversed the Schuylkill Court, was that involving the Thompson lands. This property of some 10,000 acres in six townships contains coal. The deposits are spotty, and as long ago as 1883 or 1884 the Pennsylvania R. R. had them tested with a view to development, and gave them up. There have been a few operations on them, none successful.

In 1919, Albert Thompson, the owner, disgusted at mounting taxation, put up his land at public sale. This sale was advertised in the region, in New York and in Philadelphia, and it actually took place in Pottsville, Sept. 29, 1919. There were several bids, and the highest offer was made by a lawyer from Philadelphia, acting for an undisclosed client, who offered \$300,000 and gave a certified check for ten per cent. It later appeared that he was acting for a daughter of Thompson, but that fact was not known at

the time, and even so, she was not the only bidder.

This property, in 1922, was returned by the county at a "real value" of one million dollars, with a taxable valuation (60-per cent ratio) of about \$600,000, which was cut to \$454,749 (on the 45-per cent ratio). The court upheld these absurd figures, despite the open public sale. It was properly and curtly reversed. This tax fight is not by any means ended. There will be interesting details later regarding some aspects.

In Luzerne County much attention was paid to the progress of the battle in Schuylkill, and with reason. In 1913 the valuation of coal lands in Luzerne was, in round numbers, \$170,000,000. By 1925 it was raised to \$226,000,000. The Lehigh & Wilkes-Barre Coal Co. promptly went to the mat with the Commissioners, and appealed all the valuations. Only one case has been heard, that involving their lands in Ashley Borough.

OVER THREE TIMES TOO HIGH

The company holds there about 580 acres of coal and coal land. The valuation for taxable purposes was \$4,448,618. As the 60-per cent ratio is used, the actual value would therefore be \$7,476,966.

The company produced seven engineers, many of them prominent: George E. Stevenson, Eli T. Connor, Charles Dorrance and Thomas Kennedy, of Scranton; R. V. Norris, C. F. Huber and Charles Miles, of Wilkes-Barre. Seventeen cases of coal-land sales were cited (one being of a tract included in the 580 acres) the highest price paid being \$4,300 and the lowest \$1,680 an acre. On the basis of sales values and their knowledge of the tracts, the above engineers estimated actual value to be anywhere from about \$1,500,000 to \$2,228,000, five of the estimates being substantially between \$2,000,000 and \$2,200,000.

The county produced seven experts (five of whom had been concerned in the Schuylkill County venture, and whose evidence the Supreme Court dismissed as of no value) who figured the actual value of the 580 acres anywhere from \$8,000,000 to \$13,800,000. One of them, Mr. Sekol, admitted he figured entirely on supposed content at a supposed value per ton in place. Another was George Tappen, who attempted to testify in Schuylkill County on the value of a tract of land which he had never seen, of whose size and shape he was

ignorant, of whose surroundings he had no knowledge and of whose value as determined by a sale a few years before he had never heard. This Ashley case was argued June 1. A decision is expected next month.

Nobody can correctly estimate value by content, especially in distorted measures. Besides, the Supreme Court of Pennsylvania, in a long line of decisions going back to

COUNTY, school and municipal taxation on anthracite properties already exceed 20c. per ton of annual shipments and would be much more if the Commissioners could amend the Constitution to their liking. There are two ways of raising the assessment on coal—excessive estimation of the full values and the taking of an excessive percentage of those values for the assessed valuations. The Commissioners try both these, but the higher courts insist on public-sale values and on assessed valuations of equal percentage for all forms of property.

times before the Civil War, has held to the unbroken rule that land is worth what it will bring, and not what somebody thinks its content may be worth. As Chief Justice Lowrie said in the case of Searles versus the Lackawanna & Bloomsburg R.R. (33 Pa. 57): "We do not measure the value of land by such facts" (that is, estimates by "experts" that under certain land in issue there was \$4,000 worth of coal). "Land may have \$4,000 worth of coal per acre in it, and yet sell for \$40 per acre. . . . Though we might have the most accurate calculation of the quantity of coal in the land, yet, without knowing exactly the expense of bringing it to the surface and carrying it to market, and the quantity likely to be lost in mining and conveying, the times in which it would be brought out, and the market prices at those times, the quantity would not help us to value the land. The gross estimates of common life are all that courts and juries have skill enough to use as a measure of land. All other measures are necessarily arbitrary and fanciful."

Now the nub of this whole Luzerne County business is that the County Commissioners, township officers and politicians, who have fattened for

many years on millions dragged out of the coal companies, are fearful that their day is about done. This talk of a new assessment system is largely bunk. In the first place, coal land is real estate, just like stone quarries, farms or city lots. Under the Constitution of Pennsylvania it is impossible to discriminate in the taxation of real estate. One law must apply to all.

The only method of amending the taxation laws so as to put coal in a category by itself would be by constitutional amendment, and somehow or other, since 1919, people in this country seem to fight shy of constitutional amendments.

BIG STAKE AT ISSUE

I can give you some idea of the stake for which these politicians are playing when I tell you that in 1925 there was a county rate of 8.9 mills and a poor rate of 2.7 mills, or a total of 11.6 mills in Luzerne. The coal properties, therefore, paid a total of more than \$2,700,000 in 1925 on those items alone. This takes no account of city, township and school taxes, which run into millions more. Some coal tonnage in Luzerne pays well in excess of \$1 tax on every ton produced, all sizes. This includes State and Federal tax, of course. Yet people wonder why pea coal can't be sold at 75c. a ton at the mines.

As nearly as may be figured, taxation on coal properties in the whole region runs somewhere around \$16,500,000 to \$18,500,000 a year. This is for county, school and municipal purposes only and does not include the tonnage tax, other State taxes or Federal taxes.

Philadelphia, Pa. ECONOMIST.

To Be Modern When Complete

My attention has been called to your issue dated June 3, where on p. 807 you publish a photograph of the boiler room at Snowdown Colliery.

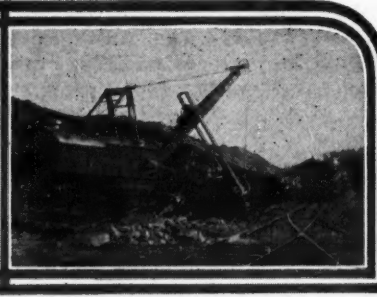
Will you allow me, as Chairman of Pearson and Dorman Long, Limited, to say that you are mistaken in supposing that this is a brand new plant. My company purchased it recently and found it more or less antiquated. Of this they have been making use while spending a large sum of money in entirely remodelling the place and putting it on a thoroughly modern basis. It was thought better to use what was available while doing this.

SIR HUGH BELL.

London, England.



News Of the Industry



Union Must Submit to Amicable Adjustment of Soft-Coal Wages Or Be Smashed, Says McAuliffe

Destruction faces the United Mine Workers unless they agree to an amicable revision of the Jacksonville agreement when they meet the soft-coal operators in Miami, Fla., next January to draw up a new contract replacing the existing one, which expires next April, said Eugene McAuliffe, president of the Union Pacific Coal Co., at a conference on mineral resources held by the Institute of Politics at Williamstown, Mass., on Aug. 5. The great increase in non-union production, said Mr. McAuliffe, would tend to break up the union unless the organization entered upon a new policy based on co-operation with the operators and on the approval of the use of machinery.

Mechanization of the mines, said Mr. McAuliffe, has been retarded because of the activities of the union and the indifference of the operators. He said that since the Jacksonville agreement went into effect on April 1, 1924, soft-coal production by union miners has fallen from 78 per cent of the nation's total to 30 per cent.

If the union persists in the uncompromising stand taken by John L. Lewis, president of the United Mine Workers, against any decrease in wages, Mr. McAuliffe said, the entire bituminous coal industry would be put on a non-union basis, similar to that now prevailing in West Virginia and other sections of the South, which have been consistently undermining union production.

Defends Jacksonville Pact

Mr. McAuliffe defended the Jacksonville agreement as "one of the most constructive pieces of work done in industry in recent years." The pact was attacked by William W. Tracy, of the Sangamon Coal Co., Springfield, Ill., and C. B. Huntress of the National Coal Association. Mr. Tracy said that "the real responsibility for the situation should be placed on politics. The politicians feared a strike during the 1924 campaign and they brought pressure on the operators to compel them to sign."

Mr. McAuliffe replied that Secretary Hoover at no time advocated the signing of the agreement or of any specific contract, but urged both sides to get together and agree as soon as possible before the public began to store coal in large quantities. The speaker's reason for favoring the Jacksonville agreement was that the public was

tired of the coal war and that the alternative to signing the agreement was a period of predatory conflict which would benefit nobody. He felt that a period of peace for three years would give both sides an opportunity to draw up plans for more amicable co-operation.

Dissecting further the troubles of the coal industry, Mr. McAuliffe said there were too many unnecessary mines and an excessive number of miners on the payroll "to whom the industry does not owe a living." He admitted that the monthly and yearly earnings of the miners was small because of unemployment, but said that unit wages were high. However, he said, not one of John L. Lewis's constituents ever entered a coal mine until it was opened by an operator and no miner ever began work unless an operator placed him on a payroll. To that extent he blamed the operators for the fact that there were too many mines and said that whenever they wished to do so they were in a position to reduce their payroll.

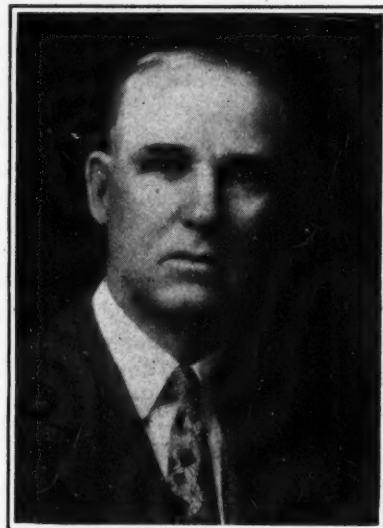
Operators in Negative Position

"The coal industry will never find itself until it gets the facts," asserted Mr. McAuliffe. "The union has had the nation by the throat several times in the last few years. Its officers have repeatedly challenged the government. This will not be stopped until the facts of the situation have become known and until the majority of the men in the industry abandon their present negative position."

A "vocal minority" among coal operators were to blame, he asserted, as they thought in terms of special price psychology rather than in terms looking toward betterment of the industry.

Mr. McAuliffe could see no reason why coal operators fought at examination of the facts of the industry. He argued that the industry had social duties to perform which it had ignored in the past. He ended with a plea for "a new attitude of mind" by the coal industry.

C. B. Huntress, of the National Coal Association, attacked the wage scale method employed by the United Mine Workers, saying that the union was arbitrarily fixing wages from its headquarters in Indianapolis. Wages, he said, should be fixed on a regional basis. He declared that the competing non-union wage scales in West Vir-



Eugene McAuliffe

ginia were to blame for the breakdown of the Jacksonville agreement.

The coal industry of the United States employs 200,000 more miners than the market requires, Samuel S. Wyer, a consulting engineer, of Columbus, Ohio, declared. He also said the nation had a greater mine capacity than it needed, and that there had been an utter lack of uniform accounting methods. Pennsylvania's inspection law, Mr. Wyer said, has given the union miner a monopoly of labor and irregularity of operation has placed a burden on the public. Mining should be declared a public utility, he said.

Embargo Threats Upset Canada

Charles Camsell, Deputy Minister of Mines of Canada, said that while on the whole Canada had been treated generously in the past by the United States on the coal question, his country could not blind its eyes to the fact that there have at times been introduced in Congress bills which would place an embargo on anthracite to Canada. Such action, he declared, caused much nervousness in Canada and made evident the necessity for the Dominion's solution of its own coal problem.

The problem of Canada, he said, was to get its coal into the interior from mines in Nova Scotia and in Alberta and Saskatchewan, but the Dominion, he added, was also trying to solve its energy problem by the manufacture of peat fuel and the development of hydro-electric power.

Dr. Moritz J. Bonn, of the College of Commerce, Berlin, said the coal situation was "the most pivotal point

in the international situation since the peace of Versailles, which might be called the coal peace." The European coal industry, he said, was in a dangerous state. Referring to the efforts of the Allies to compel the Germans to supply France with coke for the iron foundries of Lorraine, Professor Bonn said that this step created much friction and brought on the French occupation of the Ruhr. But the European coal situation has changed, he pointed out, and the demand for coal from Germany has stopped. Poland would be glad to dump some of her surplus coal into Germany, he said, and Belgium has waived her rights to reparation coal.

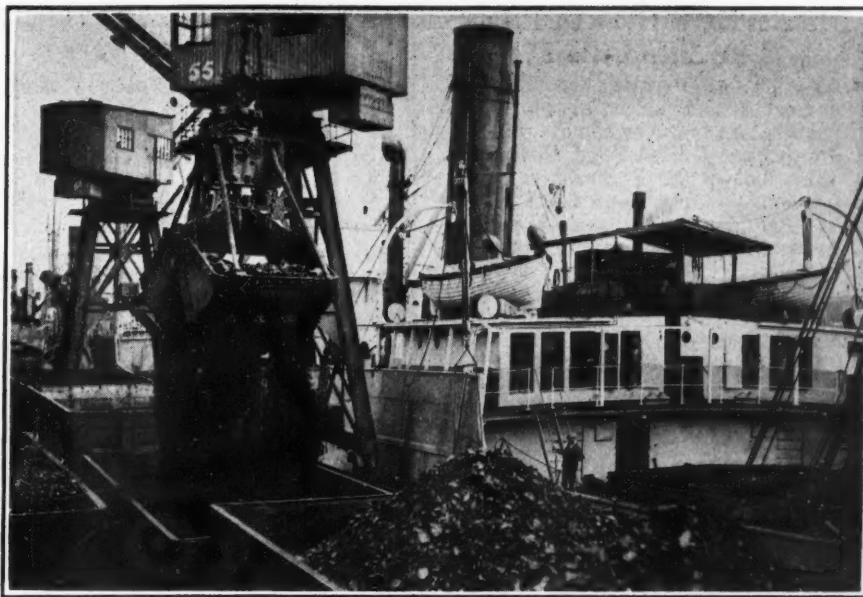
F. R. Wadleigh stressed the dependence of modern life on coal, and A. C. Fieldner, chief chemist of the U. S. Bureau of Mines, described technical developments likely to influence the rate of coal consumption.

H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers and formerly Director of the U. S. Bureau of Mines, presided at the coal conference.

Another feature of the program was an address by Sir Frederick Whyte, former president of the Indian Legislative Assembly, who described the progress of political life in India.

Voting Close on Plan To End British Strike; Result Not Yet Known

On going to press, the vote on the "bishops' plan" for ending the British coal strike had not been revealed, but apparently it is quite close. If the vote goes against that memorandum, the mine leaders who have advocated the acceptance of the proposal will be greatly embarrassed. If, on the other hand, the plan is adopted the Industrial Christian Fellowship and the union will have to induce the government to accept their terms, which is a big order, seeing that the bishops and their nonconform-



Wide World Photo

American Coals Carried to Newcastle

The steamer "Remenham," which recently docked, brought the first cargo of coal to the Tyne from the United States since the British mines suspended operation. About 5,500 tons was aboard, consigned to a local utility company.

ist allies do not seem to have the nation at their backs. They are not representative of anyone but themselves.

The British delegation is here for funds and here they must be obtained if from any place. Russia certainly has no kindly feeling toward men who accept suggestions from the church party and are found, even if half-heartedly, accepting the proposals of bishops and other clerics. The European miners, receiving lower wages than the miners of Great Britain, may be sympathetic but are not expected to give liberally to men whose needs are not as great as their own.

The committee which is making appeals to America for funds is headed by Ben Tillett, a member of the general council of the British Trades Union and the foremost labor leader of Great Britain. President Green, of the Amer-

ican Federation of Labor, has sent out an appeal for contributions to every local and international union in the United States. Frank Morrison will act as treasurer for the funds received. Every member of the British delegation will be given charge of some particular center; thus Miss Ellen Wilkins, M.P., will make collections in New York City.

Poor Allowance Meager

The delegation to the United States declares that "The Minister of Health has made \$5.60 a week the maximum that any guardians of the poor may pay a miner's family, no matter how many children he may have. Many guardians are paying much less. On July 29 the Chamberlain admitted in the House of Commons that certain guardians are paying only 86c. each week for wife and child and \$1.48 for wife and three children.

"No relief is given to any male over fourteen. The cost of living is nearly as high as in the United States. If school meals are given, the cost is deducted from the total relief paid. All such money is strictly on loan."

A periodical is being issued, apparently by the mine owners, called *The Coal Strike News*. It declares that 20,000 men are at work and gives details. The mines working are in Shropshire, Worcestershire, Yorkshire, the Forest of Dean, Leicestershire, Durham, North and South Wales and Clackmannan (Scotland). This is unusual in British coal strikes, which are generally 100-per cent affairs except for a little isolated mine in the Oolitic formation in the north of Scotland that manages to extract a little coal when all the other mines are down.

The periodical quoted gives figures from the Coal Commission's report showing that coal hewers in Great Britain work less hours and make more pay per hour than any other skilled workers of ordinary classification. The engineers on the railroads and painters make less pay per hour than miners.



Keystone

Bishops Take a Hand in British Coal Strike

At least one of the church dignitaries was in cheerful mood as they set out to meet Premier Baldwin and present proposals in the serious business of trying to settle the coal strike, now in its fourth month.

District 21 Strives to Inject Life Into Union

Adoption of drastic constitutional amendments and intensive efforts at reorganization featured the district convention of the United Mine Workers of District No. 21 at Fort Smith, Ark., last week. Salaries were fixed as follows: President, \$339; vice-president, \$280; secretary-treasurer, \$299 monthly. Twenty-five per cent of this will be assessed for the relief of miners during strike periods. Other changes included the reduction of dues from \$2.50 to \$2 per month, abolition of the strike or defense assessment of 20c. per month and rules pertaining to day men and to the preferring of grievances have been changed.

A wage-scale conference committee will be elected to confer with operators, a change from the former constitutional ruling that prevented such a committee. A committee to look into the possibilities of the organization's debt to the old-age pension funds amounting to \$200,000 also will be appointed.

International Lends \$50,500

Secretary-Treasurer George K. Patterson, of Hartshorne, Okla., presented a report of receipts and disbursements from April 1 to July 21. This showed total receipts of \$8,756.46 and disbursements of \$13,948.58; total receipts in the defense fund of \$51,461.81, disbursements of \$42,521.31 and a balance of \$8,940.15; pension fund receipts of \$7,422.08, disbursements of \$570.42 and a balance of \$6,713.51. Secretary Patterson reported that the total liabilities for the district organization are \$113,288.39, including a loan of \$50,500 from the international union.

Matt McElroy, Wilburton, Okla., was elected president, Lawrence Santi, Thurber, Texas, was elected district board member to fill a vacancy created when he was suspended by former President William R. Dalrymple, whose decision was sustained by the international board. Members of the new wage

Aladdin Disappears

Typical of the desolation that marks many spots in the southern Illinois coal fields, the town of Aladdin, west of Duquoin, will be wiped completely off the map within the next few days. Once the home of a large producing mine, Aladdin has slowly been dying of the dry rot that seizes mining communities when operations cease permanently.

Recently another coal company purchased eleven of the best houses remaining in Aladdin, and these will be loaded on trucks and carried to the vicinity of Coulterville, about fifteen miles distant, for use by employees of the coal company.

County Treasurer G. Walter Clark of Jefferson County also is looking for a buyer for a large part of another coal town, Nason, home of the large mine of the Nason Coal Co.

Once this shaft gave employment to many miners and Nason looked forward to a high place among southern Illinois mining communities. But hard times came. Poor marketing conditions forced the company into receivership and during the last six months the mine has been idle. In addition last winter two disastrous fires swept the town, virtually wiping out its business district. The result is that many of the property owners have not been able to keep up with their taxes and many pieces may be sold to satisfy debts to the county.

conference are John Davidson and Ed. Jordan, Henryetta, Okla.; Jack Winters, Montana, Ark.; John Gehr, Bokoshe, Okla.; T. B. Douglas, McAlester, Okla., and McElroy ex-officio member. The convention adjourned to meet in Fort Smith next August.

Discuss Merger of 75 Mines In Illinois and Indiana

Consolidation of seventy-five bituminous coal mines in southwestern Indiana and southeastern Illinois into a \$50,000,000 corporation is under way, and the major companies now operating in this area will soon be under the control and operation of one company, according to reports.

Edwin D. Logsdon, of Indianapolis, president of the Knox Consolidated Coal Co., one of the group associated in the merger, admits that the consolidation is under consideration but adds that it has not been completed. When completed, the merger will include practically all of the important mines in district No. 11. Engineers are now working on the examinations of the properties affected by the merger.

Will Freeman, another prominent coal operator, of Terre Haute, Ind., is said to be among the group interested in the consolidation but Freeman has denied any connection with the merger. However, Freeman said he had had knowledge, beforehand, of the proposal.

The movement for consolidation is said to include practically all mine operators of the Evansville and Vincennes districts as well as a large number in southern Illinois.

The mines affected by the merger employ upward of 4,000 men when working at normal capacity.

Myers Succeeds Van Fleet On Trade Board

Abram F. Myers, of Iowa, has been given a recess appointment by President Coolidge as a member of the Federal Trade Commission. Mr. Myers, who was born at Fairfield, Iowa, in 1889, succeeds Vernon W. Van Fleet, resigned. He is a Republican, and has been senior attorney under the assistant to the Attorney General in Washington. He was employed in the Department of Justice for many years, rising from a sub-clerical position.

Mr. Van Fleet's resignation became effective July 31. He sought to retire some time ago but withheld a final decision at the request of President Coolidge. Judge Van Fleet's home is in South Bend, Ind., but he retires to take up the practice of law in Washington.

Japan to Rebuild Coal Wharf

Shanghai, China, June 16.—Plans are being made by the Japanese Government railway department to renovate the Hatoba wharf in Muroran, Hokkaido, one of the chief coal-shipping centers of Japan. The existing wharf, which was built in 1910, requires 200,000 yen for repairs every year, and it has a capacity for the shipment of only 2,000,000 tons of coal a year. The authorities contemplate its reconstruction at an expenditure of 15,000,000 yen for shipping at least 4,000,000 tons per annum.

The final decision is to be made in October, when the railway department will estimate its budget for the following year.

Rating of 25 West Virginia Industrial Towns Gives Glen White Top Score

As an industrial town Glen White has made the highest showing of any coal, oil, lumber or gas industrial community in West Virginia which has yet been examined by the extension department of West Virginia University, according to a statement by the chief of the department, Nat T. Frame. Twenty-five other towns have had their advantages "scored."

One hundred points on any phase of life is perfection. The scores awarded Glen White are as follows: Neighborliness, 77; citizenship, 75; social welfare, 85; health, 68; homes, 76; education, 82; churches, 73; appreciation of the beautiful, 77; business (the source of income, home industries, condition of stores, facilities for communication and thrift), 73; busi-

ness (the relations existing between "capital" and "labor"), 74. Averaging these phases gives Glen White a score of 76 per cent. There are 230 families in the community, with an approximate population of 800.

A neighborhood council will be formed, and this will meet each Thursday night. The purpose of the meetings will be to decide on plans for making the town even better. The following groups and activities will be represented on the council: The American Legion, Ladies' Aid, Mine Safety Club, Mining Institute, Epworth League, Church Council, Baseball League, Boy Scouts, E. E. White Coal Co., Parent-Teachers' Association, the company doctor and the community preacher.

Revenue Regulation Hits Coal Men; To Broaden Experimental Mine Aid; Hope to Head Off Coal Legislation

By Paul Wooton

Washington Correspondent of Coal Age

Regulations applying to the 1926 Revenue Act provide that all expenditures for equipment shall be charged to capital account and recovered by depreciation. This means that the coal industry will have to pay more than \$1,000,000 in additional taxes for the current year. Previous regulations have allowed a deduction, as expense, of the cost of the plant and equipment needed for maintaining output after the mine has reached a point of full development.

The new regulation results in discrimination among individuals, as it is made retroactive and applies only to past cases that have not been settled. Other operators in the same position whose cases have been closed, settled on a more advantageous basis.

During years when the tax rate was dropping rapidly, it made a material difference whether an operator was permitted to charge the entire cost of such expenditure to expense or whether he could charge off only the depreciation accruing during that year.

The capitalizing of all this additional expense which does not increase the value of the property results in piling up big depreciation charges on the last years of the life of the mine, when it already is a question whether or not it is profitable to continue operation. In extractive industries, the last years of operation are the most costly ones. One effect of the regulation will be to cause the abandonment of old properties earlier than otherwise would be the case, thereby adding to the nation's already large volume of avoidable waste.

Bruceton Mine to Aid Industry

Work at the experimental mine of the U. S. Bureau of Mines at Bruceton, Pa., is to be broadened. Director Turner believes this mine offers an opportunity to extend additional practical and valuable help to the coal industry. He is anxious to receive suggestions from coal operators as to work which can be included in the program there.

The iron and steel operators, Mr. Turner points out, have outlined a detailed program of research work which can be done best by the government. He hopes that the coal operators will

suggest work which would be of greatest value to them.

There is no thought of conveying the impression that effective work is not being done at the experimental mine. H. P. Greenwald, who is in charge of the mine, points out that the universal acceptance of the fact that coal dust in itself is explosive is due to experiments at this mine. In 1910, when the mine was acquired, there was a general belief that coal dust was not explosive in the absence of firedamp.

After having proved the explosibility of coal dust, the study of ways and means of preventing explosions or of localizing them if they do occur, was undertaken. This led to the effort to determine the merits of the claims of Sir William Garforth that stone dust mixed with coal dust reduced greatly the danger of an explosion. The effectiveness of this method has been demonstrated so decisively that now all large producers are using rock dust or are preparing to do so.

Just at this time, very effective work is being done on rock-dust barriers. Exact duplicates are made of various types of barriers now in use. The behavior of these barriers under explosion conditions then is tried out. Most of the current work, however, is on the study of conditions under which a gas explosion will raise coal dust and ignite it. The increasing use of permissible explosives is leaving gas ignition as the important source of explosions.

Might Forestall Legislation

Some of those who are anxious that Congress make no effort to legislate on coal continue to express the hope that

Southwest Miners' Union Formed in Arkansas

An organization known as the "Miners' Union of the Southwest," to "co-operate in every way to bring about a healthy condition to the coal industry of the Southwest," is announced as having been formed by miners in the Jenny Lind, Greenwood, Bonanza and Hartford Valley field of Arkansas. Henry L. Turner, of Mine No. 135 at Bonanza, as secretary of the union, made the announcement, saying the new organization believed that the United Mine Workers has "outlived itself" and that it was planned to make the new union international in scope.

the wage conference can be called before the convening of Congress in December. The opinion is expressed that an agreement may be arrived at with less difficulty than is generally supposed. If a plan can be devised whereby definite assurances can be given the union that there will be no decrease in the annual wage, it may be accepted as no backward step.

If an agreement could be arrived at prior to the assembling of Congress it would dissipate the last vestige of legislation menace. Even were negotiations in progress when Congress reassembles with some evidence that an honest effort is being made to come to an understanding, it would act as a great deterrent to the plans of those who would surround coal production with federal legislations.

Leading advocates of the nationalization of the coal industry in Great Britain, it is believed in Washington, are opposing any settlement plans that would put the industry on a sound basis. When production starts they want it to be at a loss, in the hope that nationalization will come out of the inevitable collapse.



"Shoot" Movies of Safety Features at New Orient

Bureau of Mines men inspect rock-dusting and other protective measures at big operation of the Chicago, Wilmington & Franklin Coal Co. Left to right: O. C. Grimmett, general superintendent's chief clerk; Bliss Wentworth, superintendent's clerk, New Orient; Joseph Louis, general superintendent (deceased); M. F. Leopold, U. S. Bureau of Mines; L. D. Smith, assistant to president; John Rodenbush, superintendent; J. W. Paul, U. S. Bureau of Mines, and C. A. Herbert, U. S. Bureau of Mines.

EDITOR'S NOTE—The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessary somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and COAL AGE editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.

Ambitious Development Plans At Consolidation Mines

Development plans involving the expenditure of approximately \$2,500,000 in the Fairmont (W. Va.) field within the near future were recently approved by the executive committee of the Consolidation Coal Co. at a meeting held in the Fairmont offices. This program has been under consideration for some time and some of the work has already been started.

At the basis of the plan is a desire to concentrate coal production in the field at ten or a dozen plants in the valley, but all of the property owned by the Consolidation company will be benefited and some of the older towns will virtually be made over. Old miners' homes will be torn down and in many instances roads will be improved, sidewalks built and attractive fences, sanitary drainage and other similar improvements will be carried out. Electric lights, running water and general living conditions of the miners will be improved at all of the plants in Marion and Harrison counties, it is said. In addition, a number of new miners' homes will be built.

The reconstruction program is wholly directed by the newly created Department of Allied Operations headed by Brooks Fleming, Jr.

Necessarily, a great deal of the improvement provided for in the program will be underground, including the installation of heavier rails, permissible equipment and new tipples at the Owens and Pinnickinnick plants. The Owens mine will be one of the first to benefit from the flame-proof treatment. When the work is completed this valley will have some of the most efficient of coal-mining plants and the company will be prepared to maintain operations steadily throughout the year.

This is the first development program the Consolidation company has embarked upon since the war in this valley and shows that company's faith in the Monongahela Valley. Col. Clarence W. Watson, president of the company, who has been at Fairmont for the last week, probably will remain for some time yet and he is throwing himself energetically into the working out of details in the new plan.

Lilly Gives Blood to Lambie, Poisoned in Mine Blast

Overcome by carbon monoxide during the rescue work following the Crab Orchard mine disaster at Eccles, W. Va., on March 8, last, Robert M. Lambie, chief of the State Department of Mines of West Virginia, recently underwent a blood transfusion as the only means of renewing the red blood corpuscles destroyed by the poison in his system. The blood was supplied by "Bob" Lilly, state mine inspector. "Bob" Lambie and "Bob" Lilly are familiarly known throughout the state as the "Coal Dust Twins." Mr. Lambie is greatly improved.

Shipments of coal west bound through the "Soo" Canals during July included 2,281,456 net tons of bituminous and 341,865 tons of anthracite.



Entertainment Committee on Deck

A large share of the success of the annual meeting of the Illinois Mining Institute aboard the Steamer "Cape Girardeau" was due to the efforts of these gentlemen. Left to right: Frank R. Tirre, James S. Anderson, C. J. Sandoe and George Hook.

Efforts for Metric System To Center in Senate

Indications are that the effort to obtain legislation looking to limited adoption of the metric system of weights and measures will be transferred at the next session of Congress to the Senate side of the Capitol. At the last session extensive hearings were held before the House Committee on Coinage, Weights and Measures, but no legislation could be agreed upon which met the approval of the committee.

As a result of the experiences at the first session, a bill has been drawn providing that the Department of Commerce "is authorized to establish commodity quantity units for general use in merchandising after 1935, standardizing the yard to the meter, the quart to the liter, the pound to five hundred grams decimally divided."

The bill will be sponsored in the Senate by Mr. McKinley of Illinois, who is chairman of the committee having jurisdiction—the Manufacturers Committee. This insures the conduct of hearings at any time he may call them.

Combustion Advice Given Over the Air

A new publicity stunt inaugurated recently by the Kansas City Coal Credit and Coal Service Bureau was a radio talk on combustion over WDAF (*Kansas City Star*). The idea was to acquaint local consumers with the expanded service of the Bureau in the inspection of heating equipment both in office buildings and home. At a recent meeting of the members of the Bureau it was decided that W. E. Stout, combustion engineer, should have additional help to take care of calls from the larger downtown plants. The service is free.

Dalrymple Is Reinstated, Then Resigns

William Dalrymple, of Muskogee, Okla., who was deposed as president of District No. 21, United Mine Workers, by the district executive board, has been notified of his reinstatement by the international board. The notification also stated that Gomer Jones, who has acted as president during Dalrymple's suspension, and Lawrence Santi, district board member, had been ousted from office.

Dalrymple appealed to the international board after his removal on charges of maladministration.

Soon after the announcement of the lifting of his suspension Dalrymple submitted his resignation, effective immediately, to all local unions holding membership in the district organization. "The verdict rendered by the international committee makes it possible for me to do this gracefully with a clean bill," the president declared. "A dual organization has made continued efforts to destroy our fraternity. Now that I have come clear, I feel it to the best interest of all concerned to step down."

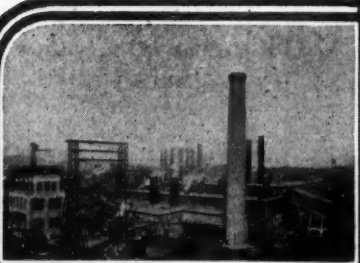
Utility Power Output and Coal Consumption Up in June

Public-utility power plants in the United States consumed 3,171,889 net tons of coal in June, according to the U. S. Geological Survey, compared with 3,086,090 tons in the preceding month. Fuel oil consumed by these plants in June totaled 620,628 barrels, against 603,488 barrels in May.

The average daily production of electricity by public-utility power plants in the United States in June was 195,850,000 kw.-hr., about 4.5 per cent larger than the average daily output in May. The total output for the first half of this year was 35,330,000,000 kw.-hr., an increase of about 12 per cent over the output for the same period in 1925 of 31,633,000,000 kw.-hr. These figures indicate that the total output for this year probably will be between seventy and seventy-five billion kilowatt-hours.

I. C. C. Disallows Short Cut from Owensboro to Elnora

A dream of fifteen years or more was again shattered for Owensboro, Ky., and the western Kentucky coal fields when the Interstate Commerce Commission, on Aug. 4, again refused the Owensboro, Rockport & Chicago R.R. permission to build an 84-mile road with a bridge across the Ohio River to make a short cut from Owensboro connecting with the Chicago, Milwaukee & St. Paul at Elnora, Ind. English capital is behind the building of the road and the money is available. The Commission agreed to the bridge building, which has been sanctioned by the Rivers department, but the company isn't interested in a bridge and short haul. The connection would give a fine outlet north, but the Commission holds that there is no need of the road, which would interfere with the Southern Ry.'s business in the community.



News Items From Field and Trade



ALABAMA

Plan New Explosives Plant.—E. I. du Pont de Nemours & Co. has taken option on 1,240 acres of land about ten miles from Birmingham as a site for a large explosives plant of the most modern type. This plant will supply high explosives for the Birmingham mining district and for the Southeast Atlantic Gulf States construction, near Birmingham.

ARKANSAS

Coal mines at Branch have resumed loading coal after having been closed for 60 days. The W. E. B. Coal Co. has a number of leases to uncover.

COLORADO

National Fuel Property Sold.—The property of the National Fuel Co. was sold July 31 to the bondholders' protective committee on its bid of \$725,000 at a receiver's sale in the offices of the company, 511 Colorado Building, Denver. The bondholders' protective committee is composed of John R. Cary, Baltimore, and H. J. Alexander, Julius C. Gunter and W. S. Iliff, Denver. No plans have yet been announced for the operation of the property by the purchasers. The National Fuel Co. is the fourth largest fuel operating company in the state. It owns and operates a number of coal mines in Boulder, Weld, Las Animas and Huerfano counties. The yards and equipment are located in Denver. The property was placed in the hands of H. Van Mater, president of the company, as receiver, on July, 16, 1925.

June Output Below a Year Ago.—The state coal mine inspector's report for June, 1926, shows a production of 592,282 tons, compared with 599,302 tons, the same month a year ago, a decrease of 7,020 tons. The total output for the six months' period ending June 30 shows a decrease of 59,291 tons from the corresponding period a year ago. The average number of men employed in and about the mines was 11,236 and the number of days worked per mine was 101.2.

ILLINOIS

Mine Idle Five Months Opens.—Mine No. 3 of the Saline County Coal Corporation, at Harrisburg, resumed operations on Aug. 4 after having been idle for the last five months. The mine employs 600 men.

The Illinois Miners' Examining Board, consisting of William Hall, Robert Clem and Bernard Murphy, with John Mulli-

gan, secretary, announces the following schedule: Aug. 12, West Frankfort; Aug. 13, Duquoin; Aug. 14, Centralia; Aug. 16, Litchfield; Aug. 17, Springfield; Aug. 18, Taylorville; Aug. 19, Danville; Aug. 20, LaSalle; Aug. 21, Peoria.

INDIANA

Sues for Misrepresentation.—W. W. Gray, president of the Citizens' National Bank at Evansville, was in federal court Aug. 2 in connection with a civil action involving \$750,000 against the Williams Coal Co., of which he is a large stockholder. The suit was filed by Harvey C. Adams, of Danville, Ill., a coal operator. Adams alleges the Williams Coal Co. misinformed him about the thickness of the coal beds on lands in Pike County and as to the thickness of rock and soil covering the coal. He was to pay the coal company 35c. a ton for all coal taken off the lands. He says he organized the Pike County Collieries Co. and went to big expense in getting machinery on the land. Attorneys for the coal company say that Adams was not bound by contract to mine the coal. The Collieries company now is in the hands of a receiver. Judge Robert C. Baltzell of the U. S. District Court heard arguments and will give a decision later.

After an enforced idleness of two months since the tippie burned, the Fourth Vein mine, owned by the Knox Consolidated Coal Co., of Vincennes, has resumed operations. The tippie was rebuilt.

Restitution of \$3,300, which had been paid by residents of Attica, for stock in the Pine Grove Mining Co., with headquarters in Pasadena, Cal., has been made by officials of the company, according to Earl Coble, investigator for the Indiana Securities Commission. The money represented checks and drafts and the sum was returned after the company had failed to register with the commission to do business in Indiana.

A mile square of land in Clay County has been leased from the board of foreign missions of the Methodist Church by the Midcontinent Coal Co. The mission's board holds title to the property through a deed made by Samuel Oakwood, of Chicago. Part of the land previously was stripped for coal by the Patoka Coal Co. The Midcontinent company will take out a stratum of No. 3 bituminous coal.

Sullivan County Mines Reopen.—A revival of business in the Sullivan County field is expected to follow the recent resumption of work by some of the largest mines in the field. Glendora

mine, which has been idle since May 1, again is hoisting coal, and Peerless mine, equally large, which was closed several weeks, also has resumed work. It is expected that the Ebbw Vale and Baker mines will start in a few weeks.

KENTUCKY

Fred G. Hatton, head of Hatton, Brown & Co., Inc., of Columbus, Ohio, receiver for the Himler Coal Co., of Himlerville, announces that operation at the mines is progressing satisfactory, with tidewater business taking a large percentage of the production. The mines are producing about 35,000 tons monthly. No steps have been taken to terminate the receivership, which probably will continue for several months.

The first unit, of 5,000 kw., is being installed at the steam power house under construction at Nortonville for the Kentucky Electric Power Corporation, which is designed for an ultimate capacity of 50,000 kw. The power house is located adjacent to the tippie of the Norton Coal Mining Co. and coal is delivered to the bunkers of the power house by conveyors from the mine mouth of that company. It is of brick with steel frame, gypsum roof on the turbine room and concrete roof on the boiler room. The 5,000-kw. unit is supplied with steam from an 800-hp. boiler fired with powdered coal.

MINNESOTA

State Saves \$13,000 on Coal.—The state commissioner of purchases has awarded contracts for about 130,000 tons of bituminous coal at a cost of \$730,000 for use in the various state institutions. According to H. W. Austin, state commissioner, there will be a saving of 10c. per ton as compared with a year ago. Contracts were awarded to the following companies: Chicago, Wilmington & Franklin Coal Co., Chicago, 48,000 tons, \$249,700; Northwestern Fuel Co., St. Paul, 27,000 tons, \$173,000; Northern Coal & Docks Co., 47,000 tons, \$262,000; Great Lakes Coal & Dock Co., 7,000 tons, \$42,000; Pittsburgh Coal Co., 450 tons, \$2,400.

MISSOURI

Work has started on the shaft for the coal mine to be opened at Ely crossing, north of Kirksville for the Adair County Coal Co. Ed White, of Kirksville, is superintendent, and J. L. McCabe, of Wichita, Kan., is general manager. The bed which is to be opened is about 54 in. thick. The shaft which is being sunk is on a 6½-acre plot belonging to Frank Mock. The company

has leased 1,600 acres of land. The shaft is expected to be down within about two months and about 300 men will be employed.

NORTH DAKOTA

A lease of 640 acres of public coal land in North Dakota to the Pratt Corporation was authorized to be issued at the Interior Department today. The tract is located in Mercer County. Under the provisions of the lease the company must invest \$40,000 in developing the property and must produce a minimum of 20,000 tons of coal annually beginning with the fourth year of the lease.

OHIO

The Alma-Freeburn Coal Co., chartered in Columbus several weeks ago with a capital of \$25,000, has been organized with the election of I. B. Hurst as president; R. E. Marburger, secretary, and Ray Ayers, treasurer. The company was formed to operate the mine of the Royalty Coal Co., of Columbus, located at McCarr, Ky., on the Norfolk & Western R. R. The property formerly was held by the Alma-Thacker Coal Co., which went into the hands of receivers several years ago. There are 3,000 acres of coal with a new tippie and other modern equipment. The present output is 1,400 tons monthly, which will be gradually increased.

The large operation of Monsarrat Bros. located at Drakes, in the Hocking Valley, will reopen Aug. 15, according to an announcement of the company at Columbus. The mine has been closed since about the first of the year.

PENNSYLVANIA

Cosgrove-Meehan Earnings Mount.—The Cosgrove-Meehan Coal Corporation reports net earnings, after all charges, for the six months ended June 30, of \$127,885, equal to 49c. per share on the 245,252 shares of common stock outstanding. The same period last year showed a deficit of \$10,472. The balance sheet June 30 showed total assets of \$12,705,450. Current assets were \$1,738,610 and current liabilities \$718,027.

Buy John Markle Holdings.—Alvan Markle, Jr., Eckley B. Markle and Donald Markle, sons of Alvan Markle, Sr., of Hazleton were reported last week as having completed negotiations for the purchase of the interests of John Markle, of New York, in the Jeddo Highland Coal Co. The company is one of the largest independent anthracite producing companies in the hard-coal fields.

The Pittsburgh Terminal Coal Corp. is operating practically at capacity in all its mines. Avella mine, which was closed due to labor difficulties, resumed production six weeks ago, and other properties which were running part time have changed to a full-time basis.

One Bidder on Coal Under Park.—The Johnstown City Council received one offer for the twenty-eight acres of coal underlying Roxbury Park. The Smokeless Coal Co. submitted a bid of \$20,100 for the "C" Prime seam be-



House Where Cloudburst Victims Slept

Three of the six people killed in a recent heavy storm were in this coal company house near Hellier, Ky. Although there was a generally heavy rain in the vicinity, the cloudburst extended over an area of only 15 to 20 acres. Rocks, loosened by the water, rolled down the hill and caved in the side of the house and carried away the floor.

neath the park. There is considerable opposition to the sale of the coal and the matter will be thrashed out by Council at a later date. Opinion differs as to what might happen to the park if the coal were removed.

The power plant of the Eagle Valley Coal Co.'s mines at Eddyville, near Kittanning, recently was blown up by vandals, causing a loss of \$15,000. Rebuilding will begin at once. Edward C. Ring, of Buffalo, formerly was president of the company.

VIRGINIA

Clinchfield Profits Decline.—Net income for the first six months of the Clinchfield Coal Corporation totaled \$204,581, after charges and federal taxes, which equals, after preferred dividends and sinking fund, 96c. a share on 145,476 shares of common stock. This compares with \$241,615, or \$1.21 a share, in the first half of last year. For the second quarter of 1926 the income was \$7,897, or 32c. a share, against \$83,165, or 35c. a share, in the similar quarter of 1925.

Profits Vanish.—Virginia Iron, Coal & Coke Co. reports for the quarter ended June 30, 1926, a loss of \$39,616, after interest, depreciation, depletion, etc., comparing with a loss of \$10,017 in the preceding quarter and of \$70,264 in the second quarter of 1925. Loss for the first six months of 1926 totaled \$49,633, against profit of \$147,041, equal to 84c. a share earned on 100,000 shares of common stock, after allowing for preferred dividend requirements in the first six months of the previous year.

A certificate of authority has been granted by the state Corporation Commission to the Great Valley Anthracite Corporation, chartered under the laws of New Jersey, for the purpose of mining and dealing in coal in Virginia. The principal Virginia office is located in East Radford, with H. C. Tyler in charge.

WEST VIRGINIA

Mining Injunction Appealed.—An appeal and supersedeas has been granted by the West Virginia Supreme Court to the Connellsville By-Product Coal Co. and the Cochran Coal & Coke Co. from the decision of Judge I. Grant Lazelle, of the Circuit Court of Monongalia County in granting an injunction to the Continental Coal Co. restraining the appealing companies from

removing pillars or otherwise mining coal in their operation of the Pittsburgh vein in such a way as to endanger the Sewickley vein above it, operated by the Continental company. The Connellsville company in appealing set out that its rights to the Pittsburgh seam were obtained prior to those of the Continental company in the other vein, that the Pittsburgh vein was the dominant vein and that there remained only about 30 acres and some scattered stumps and pillars unmined in the Sewickley bed, while the loss if prevented from mining the Pittsburgh coal would be greater than the value of the Sewickley coal.

The Pittsburgh Coal, Land & Railroad Co., Pittsburgh, Pa., has changed its name to the Clover Splint Coal Co., according to a certificate filed in the office of the Secretary of State in Charleston. Howard N. Eavenson, of Pittsburgh, is president of the company.

I. C. C. Probes Railroad Deal.—Johnstown (Pa.) men have confirmed the sale of the Greenbrier & Eastern R. R. to the Union Trust Co., of Cleveland, Ohio, which is thought to be acting for the Chesapeake & Ohio Ry. and the Van Sweringen interests. The sale price is said to be in the neighborhood of \$1,500,000 and the capital investment in the road by the sellers was \$1,000,000. The Greenbrier & Eastern was built to develop a large acreage of smokeless coal in the New River field, the largest undeveloped acreage in the heart of the state at that time. The line is 11 miles long and serves five companies, producing more than 1,500,000 tons of coal annually. The coal field and the little railroad are in close proximity to lines of the Baltimore & Ohio, New York Central and the Chesapeake & Ohio railroad systems, three strongly competitive trunk lines, and the line was desired by all of them. The line starts at Rainelle, W. Va., and runs to Marfrance. The Interstate Commerce Commission has ordered an investigation into the purchase of all the outstanding capital stock of the railroad by the trust company on behalf of the Chesapeake & Ohio Ry.

Corona Tippie Burns.—Fire believed to have been of incendiary origin destroyed the tippie of the Corona Coal Co. mine at Hepzibah July 30. The fire spread into the mine and had penetrated about 200 ft. back into the entrance shaft. Two forces of men were battling the fire. One crew was building brattices to shut off the flames and

the second began work on a water pumping plant to bring water from the West Fork River, a mile away. The Hepzibah mine is operated on a non-union basis and employs about 200 men. The loss was estimated at \$75,000.

Virgin Development Started. — The Guardian Coal Co. recently made preliminary surveys to develop a virgin piece of coal land near Holly Junction, Webster County. The mine will be located on the Baltimore & Ohio R.R. The Eagle seam, which yields a high grade byproduct coal, will be developed, and a drift opening will be started soon. Within four months the mine is ex-

pected to be developed and eventually produce 500 tons of coal a day. A small wooden tippie will be erected. The officers of the Guardian Coal Co. are David D. Chidester, president, and James E. Glass, secretary and treasurer, both of Philadelphia. There are 7,580 acres of coal land in the tract.

William D. Slush, of Milan, Mich., father of Harry Slush, general manager of the Seng Creek Coal Co., was killed when a swinging bridge collapsed at Whitesville, Boone County, late in July. Seven miners employed by the Seng Creek Coal Co., also were injured in the accident.

CANADA

Expands Domestic Coke Facilities. — With the intention of permanently engaging in the manufacture of domestic coke, the Algoma Steel Corp., Sault Ste. Marie, has let a contract for a new screening plant to cost \$250,000, it is announced by Manager J. D. Jones. The new plant, which will permit the distribution of between 150,000 and 175,000 tons of coke a year, is expected to be ready for operation about the middle of November. The capacity of the present plant is about 50,000 tons a year.

Executive Committee, National Coal Association, 1926-27

G. B. Harrington,
Pres.,
Chicago, Wilmington,
and
Franklin Coal
Co. Chicago, Ill.

Ira Clemens,
Pres. Clemens
Coal Co.,
Globe
Building
Pittsburg.

**Michael
Gallagher,**
Gen. Mgr.,
M.A. Hanna
Co., Cleveland
Ohio.

G. H. Caperton,
Pres.,
New River
Co.,
Charleston,
W. Va.

E. C. Mahan,
Pres.,
Southern
Coal and
Coke Co.,
Knoxville,
Tenn.

**Walter
Bernum**
Pres.,
The
Pacific
Coast Co.,
New York
City.

J. G. Bradley,
Pres. Elk River Coal &
Lumber Co. Dundon, W. Va.

M. L. Gould,
Pres., Linton Coal Co.,
Indianapolis, Ind.
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Harry N. Taylor
Pres. United States
Distributing Corp., N. Y.

S. Pemberton Hutchinson,
Pres. Westmoreland Coal Co.,
Phila. Penn.
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Among the Coal Men

George J. Mechau, well-known Buffalo coal man, who took over the management of the Toronto office of the F. P. Weaver Coal Co., of Montreal several months ago, has severed that connection and returned to Buffalo.

Prof. C. E. Lawall, who is in charge of the department of mining engineering and the mining extension department at the University of West Virginia, is planning to leave for a vacation to his former home at Allentown and Catasauqua, Pa., where he will remain until the university reopens in September.

Harry F. King, for a long time chief clerk of the Shawmut and Buffalo & Susquehanna coal offices and lately advanced to the management of the Butler Consolidated Coal Co., at Butler, Pa., married Miss Marjorie Frost of DuBois, Pa., on July 17. After a wedding trip to the Sesquicentennial Exposition and other Eastern points Mr. and Mrs. King will reside in Butler.

C. Bascom Slemph, former secretary to President Coolidge and who was instrumental in the formation of the Wakenva Coal Corporation, motored from Washington to Cincinnati with Speaker Nick Longworth, paid a visit to the selling corporation here and then continued on to the company's mines in Perry County and the Elkhorn district of Kentucky.

James Bonnyman, president of the Blue Diamond Coal Sales Co. left Cincinnati July 21 to sail from New York to join his brother, Alex Bonnyman, chairman of the board of directors of the Blue Diamond Coal Co. in a tour of France, Belgium and Germany, finishing up with a survey of conditions in England.

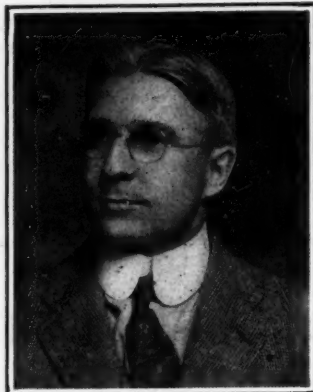
Clyde E. Hutchinson, vice-president of the Hutchinson Coal Co., Fairmont, W. Va., it is rumored, is angling for some coal properties in the Logan field.

W. R. Wilson has resigned as general manager of the Crow's Nest Pass Coal Co., Fernie, B. C., after many years of service in that capacity. Mr. Wilson was succeeded by his son, Hartley P. Wilson, who for some time has been assistant manager and acting manager in his father's absence on business for the company.

J. V. N. Dorr, president of the Dorr Company, New York City, sailed July 23 for Europe on the "Homer." He will remain abroad for about six weeks.

W. B. Lewis, president of the Alamo Coal Co. and the Oakdale Coal Co., Denver, Colo., announces the appointment of P. E. Rinehart as manager of sales, with headquarters in Denver, and of J. F. McDermott as assistant to the president of the above properties, also with headquarters in Denver. H. F. Nash has resigned as manager of sales.

W. H. Maher has taken charge of the Norfolk (Va.) office of the Eastern Coal & Export Corporation, succeeding E. M. Robinson, who resigned recently.



S. D. Dimmick

S. D. Dimmick recently was elected to the board of the Glen Alden Coal Co. at a meeting of the directors in Scranton, Pa. Mr. Dimmick has long been regarded as one of the best posted mining men in the anthracite field and his service on the board is expected to add to the welfare of the Glen Alden.

Changes in operating officials of the Philadelphia & Reading Coal & Iron Co. recently announced at Pottsville, Pa., include the following: J. E. Caldwell has been appointed superintendent of the Mount Carmel division; E. C. Jones, inside superintendent of the Shamokin division; L. D. Lamont, assistant to the general superintendent, and George A. Roose, superintendent of the St. Clair division.

E. S. Moore was appointed general superintendent of transportation, effective Aug. 1, by the Norfolk & Western Ry., with office at Roanoke, Va. He succeeds D. E. Spangler, who died recently. J. R. Talbott has been named superintendent of transportation, with office at Roanoke, succeeding Mr. Moore, and J. D. Woodruff has been appointed superintendent of car service, vice Mr. Talbott.

Gardner Pattison, of Pattison & Bowns, Inc., New York City, sailed last week on the "Homer" on a European trip.

Obituary

J. E. Watson, Active 40 Years In West Virginia Field, Dies

James Edwin Watson, of Fairmont, aged 67, identified with the coal interests of Fairmont since his early manhood, died at his home, "Highgate" in Fairmont, W. Va., on Aug. 2 after an illness of more than two weeks. He began his career in the coal industry with his father, the late James Otis Watson, who was a pioneer in opening the coal regions of northern West Virginia.

More than 40 years ago Mr. Watson took charge of the J. O. Watson coal interests, which embraced practically all of the coal operations in northern

West Virginia. He organized various companies and was at their head until his health failed in 1899. Later when the Consolidation Coal Co. was formed from the allied corporations he retained his interest and was active in its affairs until near the end of his life. He was an organizer of the Old Bank of Fairmont and president of the concern for many years, also retaining the presidency when the National Bank of Fairmont was formed. He relinquished the office about a year ago.

Mr. Watson married Miss Mattie Moderwell, of Chicago, who survives him in addition to two sons and one daughter. He also leaves two brothers, S. L. Watson and Clarence W. Watson, formerly Senator from West Virginia and who also is president of the Consolidation Coal Co.

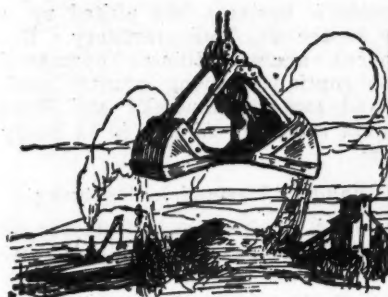
Mr. Watson was formerly an active leader in the Democratic Party. He had been a semi-invalid for many years, but still took an active part in business affairs. The funeral was held last Wednesday evening at the family home.

Charles E. Hawker, well-known coal operator and attorney of Fairmont, W. Va., 53 years of age, died at his home at Fairmont early last week, after three days' illness of congestion of the lungs. Mr. Hawker practiced law in Atlanta, Ga., for a time, but moved to Fairmont about twenty-five years ago. Of late years he had devoted much time to the coal business and for several years had been the legal and personal representative of the Edward Hines coal and lumber interests in northern West Virginia. He also was president of the Rosedale Coal Co., of Morgantown, which he recently acquired.

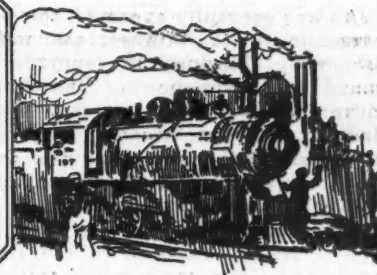
John F. Young, 56 years old, head of the Young Car Co., manufacturers of coal mine cars at Evansville, Ind., died at a hospital in that city July 21. Death was due to pneumonia. He was sick but a few days. Mr. Young had been engaged in the business of manufacturing coal mine cars for a number of years and was well known to the coal trade, especially in Indiana, Illinois and Kentucky. Burial was in Evansville. Mr. Young is survived by his wife and two sons.

Association Activities

The Monongalia Coal Operators' Association of Morgantown, W. Va., has been granted a charter at Charleston, W. Va. The association has been reorganized with the following incorporators: Attorney Charles A. Goodwin, of Morgantown, general counsel of the Brady-Warner Collieries Co.; F. C. Shriver, of Morgantown, president of the Shriver Coal Co.; Samuel D. Brady, of Fairmont, president of the Brady-Warner Coal Corporation; W. E. Watson, of Fairmont, president of the Fairmont & Cleveland Coal Co., and Attorney Emmett M. Showalter, of Fairmont, general counsel of the Continental Coal Co., of which his brother, Howard Westwood Showalter, is president. The association was organized several years ago, but later was disbanded.



Production And the Market



Soft-Coal Trade Reflects Gathering Strength; Export Demand Unabated

Any outstanding development was absent from the bituminous coal markets of the country last week, and yet with the waning of the summer season unmistakable signs of awakening from the dull routine characteristic of the trade during the heated season are beginning to appear. Interest in steam coals it is true is comparatively lukewarm in most fields, but confidence is felt in many quarters that a revival of fall inquiry is just around the corner. Domestic grades, on the other hand, showed a noteworthy increase in firmness, with a gradual but none the less appreciable gain in demand.

The export movement continues to play a leading rôle in the performance of the market. Dumpings at the Hampton Roads piers during the week ended Aug. 5 fell only slightly below the tremendous volume of the preceding week, reaching 798,844 net tons, a recession of only 7,725 tons. Baltimore, too, has experienced a revival in overseas trade and Philadelphia also is sharing in the overflow due to the congestion at the Virginia docks. The bulk of the shipments are for Great Britain.

Production Highest Since March

Output, which has kept well above 10,000,000 tons per week since the holiday drop during the first week of July, again advanced during the week ended July 31, when, according to the Bureau of Mines estimate, the total was 10,540,000 net tons, an increase of 390,000 tons over the revised figures for the preceding week. Incidentally those who nurse hopes of an early betterment in the trade take much comfort from the fact that consumption is said to be keeping pace pretty closely with production.

For the first time since the lake movement got well under way the dumpings at Lake Erie ports during the week ended Aug. 9 fell behind the total for the cor-

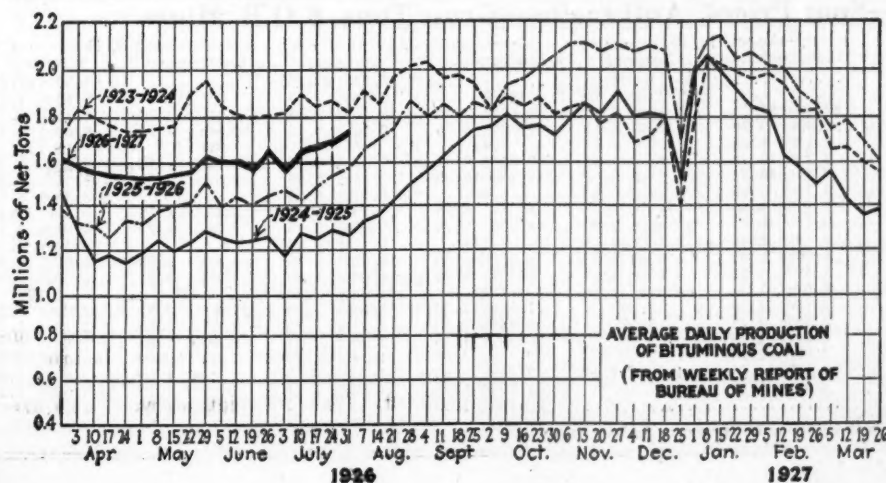
responding week of last year. Last week's figures were 873,472 tons of cargo and 48,940 tons of vessel fuel—a total of 922,412 tons, compared with 941,989 tons a year ago. This brings the season's total to 15,614,675 tons, as against 13,315,308 tons at the same time last year.

Coal Age Index of spot bituminous prices was 162 on Aug. 9 and the corresponding price was \$1.96. Compared to the figures a week earlier this was an advance of three points and 4c. West Virginia smokeless, with a dual outlet to tidewater and the lakes, shows increasing strength in all markets. Kentucky coals, aided by the lessened pressure of competition from West Virginia are enjoying a broadening demand accompanied by a stiffening of prices and the promise of further advances. A reaction set in in the Middle West last week following a spurt in demand when advances in August circulars were announced. Aside from export activity the markets of the East show no unusual features.

Anthracite Gaining in Strength

Increasing strength pervaded the hard-coal market last week. Demand for domestic sizes showed a notable pickup in momentum and prices for independent output advanced slightly. Independent producers are still working on curtailed schedules, but the line companies are losing only one day a week on the average. Stove is in good demand and even chestnut is showing more signs of life. Pea is receding from its recent proud position. The steam grades are likewise staging a modest comeback.

A softening tendency was noticeable in the Connells-ville coke trade last week, with occasional price shading on spot furnace to \$2.75. Some lots of foundry coke also sold at special prices, though both grades were quotably unchanged.



Estimates of Production

(Net Tons)		
BITUMINOUS		
	1925	1926
July 17.....	8,965,000	10,116,000
July 24 (a).....	9,343,000	10,150,000
July 31 (b).....	9,457,000	10,540,000
Daily average.....	1,576,000	1,757,000
Cal. yr. to date..... (c)	273,411,000	310,978,000
Daily av. to date.....	1,526,000	1,735,000
ANTHRACITE		
July 17.....	1,936,000	1,979,000
July 24.....	1,999,000	1,940,000
July 31.....	2,036,000	2,066,000
Cal. yr. to date..... (c)	52,508,000	44,682,000
BEEHIVE COKE		
July 24 (a).....	124,000	172,000
July 31 (b).....	122,000	176,000
Cal. yr. to date..... (c)	5,810,000	7,408,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Midwest Trade Quiet but Firm

As was generally expected, there was a reaction in the Midwest coal market last week following the spurt in demand in anticipation of the Aug. 1 advance in circular prices. Illinois, Indiana and west Kentucky operators are closely adhering to the new schedules, however, expecting a noticeable pickup in trade soon.

The Middle West for the first time felt a definite reaction to the British coal strike last week when smokeless operators increased their circular price in a great many cases to \$3.50 per ton, f.o.b. mines, on prepared sizes. By-product eastern Kentucky and West Virginia mine-run coming into Chicago also was affected, quotations having advanced to \$1.65@1.75 for good high-volatile. Pocahontas mine-run is expected to come in for a good strong advance between now and Sept. 1, unless the British strike is settled.

The market on steam coals is so quiet that few operators have had an

opportunity to boost their prices. Industries in the Middle West, as a general rule, are in excellent shape, but enough coal is produced from local mines to satisfy the current demand.

The advance in the price of lump and egg in the Williamson, Franklin and Saline counties field on Aug. 1 did not stimulate business, so that all mines have a lot of "no bills." The smaller sizes are moving quite freely and there is a good demand for steam. Railroad tonnage is exceedingly light at the shaft mines but is fairly good at the strip mines. In the Duquoin and Jackson County field conditions continue about where they have been for the past three months. In the Mount Olive field prices advanced 25c. to country trade on Aug. 1 and the result is that country business dropped off. Conditions in the Standard field continue bad, with west Kentucky 6-in. lump coming in and taking the trade of the field at a lower price than Standard 2-in. lump can be sold at.

Domestic business has picked up a little in the St. Louis territory. Resentment against Illinois operators' prices continues among country dealers and eastern Kentucky and West Virginia coals are coming in in heavy volume.

Expanding Demand in Kentucky

Demand in Kentucky continues to broaden, prices have stiffened and there are indications of still better prices. Retailers are placing orders much more freely, and all sizes are in demand.

General industrial activity is keeping screenings so well cleaned up that they are commanding the best summer prices in some years in both fields. Lake movement continues quite active and shipments to the Northwest are increasing.

Spot quotations in eastern Kentucky have been generally advanced to \$2.50 on block, although some can be had at \$2.25; lump and egg are priced at \$2@2.25, but can be had at \$1.75; nut

Current Quotations—Spot Prices. Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Aug. 10 1925	July 26 1926	Aug. 2 1926	Aug. 9 1926†	Midwest		Market Quoted	Aug. 10 1925	July 26 1926	Aug. 2 1926	Aug. 9 1926†
Smokeless lump.....	Columbus....	\$2.85	\$3.10	\$3.35	\$3.25@3.50		Franklin, Ill. lump.....	Chicago.....	\$2.85	\$2.75	\$2.75	\$3.00	
Smokeless mine run.....	Columbus....	1.85	2.10	2.15	2.00@2.30		Franklin, Ill. mine run.....	Chicago.....	2.35	2.35	2.35	2.35@2.50	
Smokeless screenings.....	Columbus....	1.35	1.25	1.30	1.35@1.50		Franklin, Ill. screenings.....	Chicago.....	2.00	1.80	1.80	1.65@2.00	
Smokeless lump.....	Chicago.....	3.25	3.10	3.10	3.25@3.50		Central, Ill. lump.....	Chicago.....	2.60	2.40	2.40	2.50@2.75	
Smokeless mine run.....	Chicago.....	2.00	1.90	1.90	1.90@2.10		Central, Ill. mine run.....	Chicago.....	2.10	2.10	2.10	2.00@2.25	
Smokeless lump.....	Cincinnati.....	3.10	3.10	3.35	3.25@3.50		Central, Ill. screenings.....	Chicago.....	1.70	1.50	1.50	1.40@1.60	
Smokeless mine run.....	Cincinnati.....	2.05	2.00	2.00	2.00@2.25		Ind. 4th Vein lump.....	Chicago.....	2.85	2.60	2.60	2.50@2.75	
Smokeless screenings.....	Cincinnati.....	1.40	1.35	1.35	1.25@1.50		Ind. 4th Vein mine run.....	Chicago.....	2.35	2.15	2.15	2.15@2.35	
*Smokeless mine run.....	Boston.....	4.30	4.60	4.65	5.00@5.15		Ind. 4th Vein screenings.....	Chicago.....	1.80	1.75	1.75	1.65@1.85	
Clearfield mine run.....	Boston.....	1.75	1.75	1.75	1.65@1.90		Ind. 5th Vein lump.....	Chicago.....	2.35	2.35	2.35	2.25@2.50	
Cambria mine run.....	Boston.....	1.75	2.00	1.85	1.95@2.15		Ind. 5th Vein mine run.....	Chicago.....	1.95	1.95	1.95	1.90@2.10	
Bonnet mine run.....	Boston.....	1.85	1.85	2.05	1.75@2.00		Ind. 5th Vein screenings.....	Chicago.....	1.50	1.50	1.50	1.40@1.60	
Pool 1 (Navy Standard).....	New York.....	2.55	2.60	2.55	2.50@2.75		Mt. Olive lump.....	St. Louis.....	2.50	2.35	2.35	2.25@2.50	
Pool 1 (Navy Standard).....	Philadelphia.....	2.60	2.65	2.65	2.50@2.80		Mt. Olive mine run.....	St. Louis.....	2.25	2.15	2.15	2.15	
Pool 1 (Navy Standard).....	Baltimore.....	1.85	2.15	2.15	2.15@2.20		Mt. Olive screenings.....	St. Louis.....	1.75	1.55	1.55	1.50@1.60	
Pool 2 (Super. Low Vol.).....	New York.....	1.95	2.05	2.05	1.90@2.25		Standard lump.....	St. Louis.....	2.25	2.25	2.25	2.25	
Pool 2 (Super. Low Vol.).....	Philadelphia.....	2.00	2.10	2.10	2.00@2.25		Standard mine run.....	St. Louis.....	1.80	1.80	1.80	1.75@1.85	
Pool 2 (Super. Low Vol.).....	Baltimore.....	1.75	1.85	1.85	1.80@1.90		Standard screenings.....	St. Louis.....	1.30	1.35	1.35	1.25@1.50	
Pool 10 (H.Gr.Low Vol.).....	New York.....	1.75	1.85	1.85	1.75@2.00		West Ky. block.....	Louisville.....	1.80	1.60	1.60	1.60@1.75	
Pool 10 (H.Gr.Low Vol.).....	Philadelphia.....	1.70	1.85	1.85	1.75@2.00		West Ky. mine run.....	Louisville.....	1.15	1.25	1.20	1.10@1.35	
Pool 10 (H.Gr.Low Vol.).....	Baltimore.....	1.60	1.75	1.75	1.75@1.80		West Ky. screenings.....	Louisville.....	.85	.85	.85	.80@1.00	
Pool 11 (Low Vol.).....	New York.....	1.60	1.70	1.70	1.60@1.85		West Ky. block.....	Chicago.....	2.00	1.75	1.75	1.65@1.85	
Pool 11 (Low Vol.).....	Philadelphia.....	1.55	1.55	1.55	1.45@1.70		West Ky. mine run.....	Chicago.....	1.35	1.15	1.15	1.00@1.35	
Pool 11 (Low Vol.).....	Baltimore.....	1.40	1.65	1.65	1.65@1.80								

High-Volatile, Eastern		Market Quoted	Aug. 10 1925	July 26 1926	Aug. 2 1926	Aug. 9 1926†	South and Southwest		Market Quoted	Aug. 10 1925	July 26 1926	Aug. 2 1926	Aug. 9 1926†
Pool 54-64 (Gas and St.).....	New York.....	1.55	1.40	1.40	1.35@1.50		Big Seam lump.....	Birmingham.....	2.00	2.45	2.60	2.00@2.60	
Pool 54-64 (Gas and St.).....	Philadelphia.....	1.50	1.45	1.45	1.40@1.55		Big Seam mine run.....	Birmingham.....	1.75	1.85	1.85	1.75@2.00	
Pool 54-64 (Gas and St.).....	Baltimore.....	1.35	1.45	1.45	1.40@1.60		Big Seam (washed).....	Birmingham.....	1.85	2.00	2.00	1.75@2.25	
Pittsburgh acid gas.....	Pittsburgh.....	2.40	2.25	2.25	2.20@2.30		S. E. Ky. block.....	Chicago.....	2.55	2.40	2.40	2.10@2.75	
Pittsburgh gas mine run.....	Pittsburgh.....	2.15	2.00	2.00	1.90@2.10		S. E. Ky. mine run.....	Chicago.....	1.70	1.60	1.60	1.60@1.75	
Pittsburgh mine run (St.).....	Pittsburgh.....	1.95	1.75	1.75	1.60@1.90		S. E. Ky. block.....	Louisville.....	2.50	2.35	2.35	2.25@2.75	
Pittsburgh slack (Gas).....	Pittsburgh.....	1.50	1.25	1.25	1.20@1.30		S. E. Ky. mine run.....	Louisville.....	1.55	1.55	1.55	1.40@1.75	
Kanawha lump.....	Columbus....	2.00	2.05	2.05	2.00@2.50		S. E. Ky. screenings.....	Louisville.....	1.15	1.10	1.10	1.00@1.25	
Kanawha mine run.....	Columbus....	1.40	1.60	1.60	1.50@1.75		S. E. Ky. block.....	Cincinnati.....	2.55	2.40	2.40	2.25@2.60	
Kanawha screenings.....	Columbus....	1.15	1.05	1.10	1.00@1.25		S. E. Ky. mine run.....	Cincinnati.....	1.50	1.60	1.65	1.40@1.85	
W. Va. lump.....	Cincinnati.....	2.35	2.35	2.35	2.25@2.50		S. E. Ky. screenings.....	Cincinnati.....	1.30	1.10	1.10	.90@1.10	
W. Va. gas mine run.....	Cincinnati.....	1.55	1.70	1.70	1.60@1.75		Kansas lump.....	Kansas City.....	4.10	4.00	4.25	4.25	
W. Va. steam mine run.....	Cincinnati.....	1.45	1.50	1.55	1.40@1.60		Kansas mine run.....	Kansas City.....	3.10	3.00	3.00	3.00	
W. Va. screenings.....	Cincinnati.....	1.30	1.15	1.10	1.00@1.25		Kansas screenings.....	Kansas City.....	2.50	2.50	2.50	2.50	
Hocking lump.....	Columbus....	2.15	2.35	2.35	2.25@2.50								
Hocking mine run.....	Columbus....	1.55	1.55	1.55	1.40@1.75								
Hocking screenings.....	Columbus....	1.35	1.10	1.10	1.00@1.25								
Pitta. No. 8 lump.....	Cleveland.....	2.25	2.15	2.15	1.85@2.50								
Pitta. No. 8 mine run.....	Cleveland.....	1.85	1.75	1.70	1.70@1.80								
Pitta. No. 8 screenings.....	Cleveland.....	1.40	1.30	1.25	1.30@1.40								

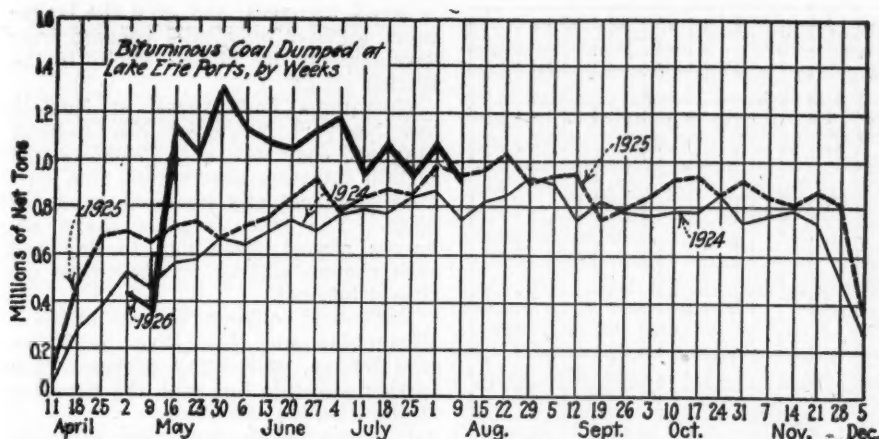
* Gross tons, f.o.b. vessel, Hampton Roads

† Advances over previous week shown in heavy type, declines in italics

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market Quoted	Freight Rates	August 10, 1925		August 2, 1926		August 9, 1926†	
				Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34			\$8.20@8.90		\$8.50@9.25		\$8.50@9.25
Broken.....	Philadelphia.....	2.39			8.25@8.90		8.50@9.15		8.50@9.15
Egg.....	New York.....	2.34		\$9.25@9.50	8.65@8.90	8.60@9.00	8.75@9.25	8.60@9.00	8.75@9.25
Egg.....	Philadelphia.....	2.39		8.90@9.70	8.70@8.85	9.00@9.75	9.00@9.15	9.00@9.75	9.00@9.15
Store.....	Chicago.....	5.06		8.17@8.60	8.03@8.28	8.48	8.13	8.14	8.13
Store.....	New York.....	2.34		9.75@10.50	9.15@9.40	9.00@9.50	9.25@9.50	9.00@9.50	9.25@9.50
Store.....	Philadelphia.....	2.39		9.15@10.75	9.15@9.30	9.15@10.20	9.35@9.50	9.15@10.20	9.35@9.50
Store.....	Chicago.....	5.06		8.71@8.90	8.40@8.80	8.84	8.33@8.58	8.59	8.33@8.58
Chestnut.....	New York.....	2.34		9.25@9.50	8.65@8.90	8.25@8.75	8.75@9.15	8.35@8.75	8.75@9.15
Chestnut.....	Philadelphia.....	2.39		9.15@10.15	8.85@8.90	8.50@9.75	9.00@9.15	8.50@9.75	9.00@9.15
Chestnut.....	Chicago.....	5.06		8.24@8.45	8.10@8.28	8.71	8.33@8.53	8.39	8.33@8.53
Pea.....	New York.....	2.22		5.00@6.00	5.00@5.55	6.00@6.50	6.00@6.50	6.00@6.50	6.00@6.50
Pea.....	Philadelphia.....	2.14		5.50@5.90	5.00@5.50	6.00@6.75	6.00@6.50	6.00@6.75	6.00@6.50
Pea.....	Chicago.....	4.79		4.91@5.36	4.91@5.36	6.03	5.65@5.80	6.03	6.10
Buckwheat No. 1.....	New York.....	2.22		2.15@2.50	2.50	1.65@2.25	3.00@3.50	1.65@2.25	3.00@3.50
Buckwheat No. 1.....	Philadelphia.....	2.14		2.50@2.75	2.50	1.85@2.50	2.25@2.75	1.85@2.50	2.25@2.75
Rice.....	New York.....	2.22		2.00@2.25	2.00	1.25@1.85	2.00@2.25	1.40@1.85	2.00@2.25
Rice.....	Philadelphia.....	2.14		2.00@2.25	2.00	1.30@2.00	1.75@2.25	1.30@2.00	1.75@2.25
Barley.....	New York.....	2.22		1.50@1.75	1.50@1.60	1.25@1.60	1.75@2.25	1.25@1.60	1.75@2.25
Barley.....	Philadelphia.....	2.14		1.50@1.75	1.50	1.25@1.75	1.50@1.75	1.25@1.75	1.50@1.75
Birdseye.....	New York.....	2.22				.75@1.50	2.00	1.25@1.50	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



is \$1.75 and up; mine-run, \$1.40@1.75; screenings, \$1@1.25. In western Kentucky block is \$1.60@1.75; lump, \$1.50@1.60; egg, \$1.40@1.65; nut, \$1.35@1.50; mine-run, \$1.10@1.35; screenings, pea and slack, 80@90c.; nut and slack, 90c.@\$1.

An element of unsettlement was apparent at the Head of the Lakes last week in that two of the docks shaded Youghiogeny quotations 25c. to \$5 for steam and \$5.25 for gas. Smokeless lump and stove advanced to \$7.25, with a steady increase in demand for it as a substitute for anthracite. Forty-two cargoes, including five of anthracite, were unloaded at the docks last week and fifteen cargoes, including two of anthracite, were reported en route. Bituminous stocks on the docks are approximately 4,000,000 tons.

Industries Picking Up

As industrial demand is growing screenings are firm. Increased operations by iron companies on the ranges is helping steam shipments. Utilities and municipalities, too, are taking deliveries on contracts placed recently. Retailers, however, are ordering only for current requirements.

Receipts of coal at Duluth-Superior docks from Lake Erie ports during July aggregated 1,905,934 tons, including 1,636,714 of bituminous and 269,220 tons of anthracite. This compares with receipts of 1,800,998 tons of bituminous and 245,707 tons of anthracite during June. For the three months from the opening of navigation to July 31, bituminous receipts aggregated 5,129,281 tons and anthracite 630,465 tons. Compared with the corresponding period last year bituminous receipts increased 895,170 tons and anthracite fell off 46,144 tons.

At Milwaukee there has been a falling off in fuel demand, which for several weeks was quite active for mid-summer. Pocahontas continues to enjoy the popular favor it won during the anthracite strike. Dock managers report another advance of 25c. a ton on orders for Pocahontas filled directly from the mines. Other prices are unchanged.

Storage Demand Eases in Southwest

Demand for storage coal slowed up in the Southwest last week, as is usual early in the month. Increasing production, especially in the Kansas field, resulted in some accumulation of domestic sizes of Cherokee lump on track without orders. Arkansas mines, how-

ever, are still slightly behind on orders, although orders are not coming in as rapidly as in the last week of July.

In the Colorado market demand continues fairly good and retailers are beginning to manifest a desire to take coal for winter consumption. Steam sizes are brisk, due to the heavy movement of slack to Arizona copper interests and for storage by beet sugar companies in Colorado, Nebraska and Wyoming, where the campaign will open the middle of September. The price war is still on in Wyoming.

Temporary Dip at Cincinnati

The situation at Cincinnati is still

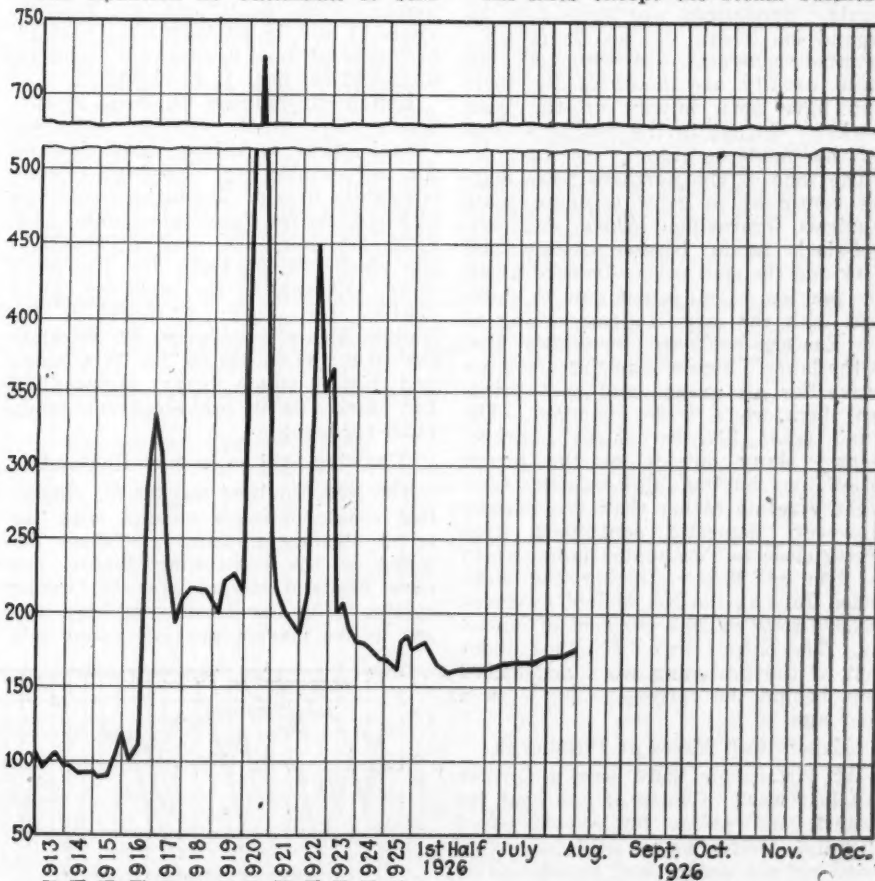
governed to a large extent by conditions at tidewater, though the steady flow of cars to Toledo and Sandusky is a steadying influence. A report that the British imbroglio was clearing caused a slight dip, which was short lived when the report proved premature.

Demand for domestic sizes of high volatile is steadily increasing and prices are firm. Screenings, however, have sagged, Kentucky stuff going below \$1 for the first time in several weeks. With a dual outlet West Virginia is better fixed.

Smokeless has been extraordinarily strong. Some producers report as much business as they can handle for August. This is reflected in a quotation of \$3.50 for spot and 25c. less for contract tonnage. The same applies to screenings, now quoted at an average of \$1.35. Retail business is draggy and sluggish.

During the week ended last Saturday 14,003 carloads of coal were interchanged in the Cincinnati district—an increase of 295 cars over the preceding week, but a decrease of 404 from last year. Included in the movement were 3,580 cars en route to Toledo and Sandusky for the lake trade. The interchange of empties en route to the mines—12,083—showed an increase of 269.

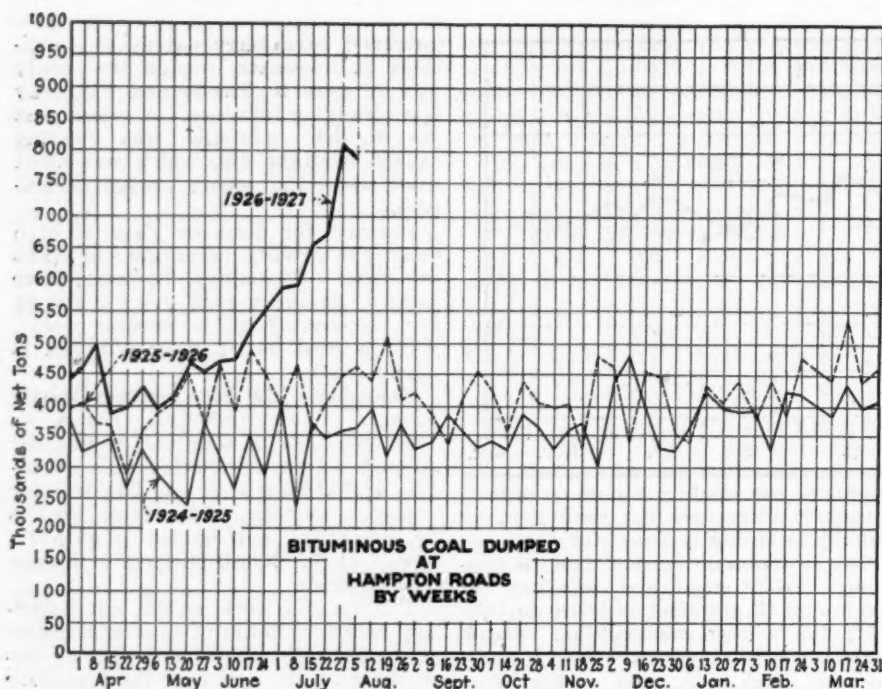
All lines except the steam business



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	Aug. 9	Aug. 2	July 26	July 19	1925 Aug. 10	1924 Aug. 11
Index	162	159	159	157	166	163
Weighted average price.....	\$1.96	\$1.92	\$1.92	\$1.90	\$2.01	\$1.98

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



are showing strength in central Ohio. Domestic trade is steady with dealers buying more briskly. Talk of further advances after the middle of August are prevalent. The steam trade is dull and featureless although utilities and railroads are taking normal requirements. Screenings are quite firm all around as there is no oversupply. Isolated contracts are reported, but these usually are renewals by users who have been buying on the open market. Output in the southern Ohio field has made no gain.

The tone of the northern Ohio market continues to grow stronger, with inquiries improving. Slack and nut-and-slack again became scarce last week and the spot price advanced about 10c. per ton. Coal is not now so abundant with the large tonnage going to the Eastern seaboard for export and to the lakes. Steam inquiries are more active for all grades and spot prices are therefore a trifle stronger. The retail trade likewise shows improvement. Many outside of the larger cities are buying high-volatile from West Virginia rather than Pocahontas. However, domestic consumers keep pretty close to Pocahontas lump, which is firm at \$3.25. During the week ended July 31 the No. 8 field produced 188,000 tons, or 26.3 per cent of capacity. The output was 5,000 tons under that of the preceding week and 41,000 tons behind the corresponding week a year ago.

Export Call Eases at Pittsburgh

At Pittsburgh there was a further lull last week in sales of gas coal for export, and prices for export eased slightly. Deliveries are still going forward on old orders and production is not visibly impaired. Sentiment is hopeful in the domestic trade based on the belief that stocking will begin soon for winter and in anticipation of possible labor trouble next spring. The railroads are gradually building up reserves. Prices are not quotably changed.

Tidewater demand for export and bunkers is helping the situation in cen-

tral Pennsylvania. Loadings during the week ended July 31 were 13,863 cars and for the month 59,113 cars, the highest for July since 1923. The increase over 1925 was 4,507 cars and when compared with 1924 the gain was 11,184 cars. Prices also are a little firmer, with quotations as follows: Pools 11 and 18, \$1.65@1.70; pool 10, \$1.75@1.90; pool 9, \$2@2.20; pool 71, \$2.25@2.35; pool 1, \$2.40@2.65.

Buffalo bituminous business is suffering the usual summer setbacks, though there is rather more demand for low-volatile coal and high-volatile is slightly firmer. Quotations continue at \$3@3.50 for Pocahontas lump, \$2@2.25 for mine-run, and \$1.50@1.75 for slack; \$1.50@1.65 for Fairmont lump, \$1.30@1.45 for mine-run, \$1.10@1.25 for slack; \$2.15@2.35 for Youghiogheny gas lump, \$1.30@1.45 for slack; \$1.65@1.85 for Pittsburgh and No. 8 steam lump, \$1.20@1.30 for slack; \$2.50 for Somerset lump, \$1.50 for slack.

Upswing Still on in New England

The New England market for smokeless coals continues strong, with the trend steadily upward. Offshore demand is the controlling factor, and New England buyers are still rather sparse. The few consumers here who are in the market are interested only

in small tonnages, and even the larger users register only mild concern over developments due almost wholly to the British strike.

Quotations f.o.b. vessel at Norfolk and Newport News for No. 1 Navy Standard coals are now \$5@5.15 and certain interests assert that spot cargoes have actually changed hands at \$5.25. The trade expects sharp advances almost from day to day and each change will be watched with the closest interest.

For inland delivery the price of No. 1 Pocahontas and New River is \$6 on cars Boston, with every prospect of a further swing in line with the situation at the Virginia terminals.

It is quite likely that there will soon be a reaction in favor of coals from central Pennsylvania, but as yet there have been no advances of any moment.

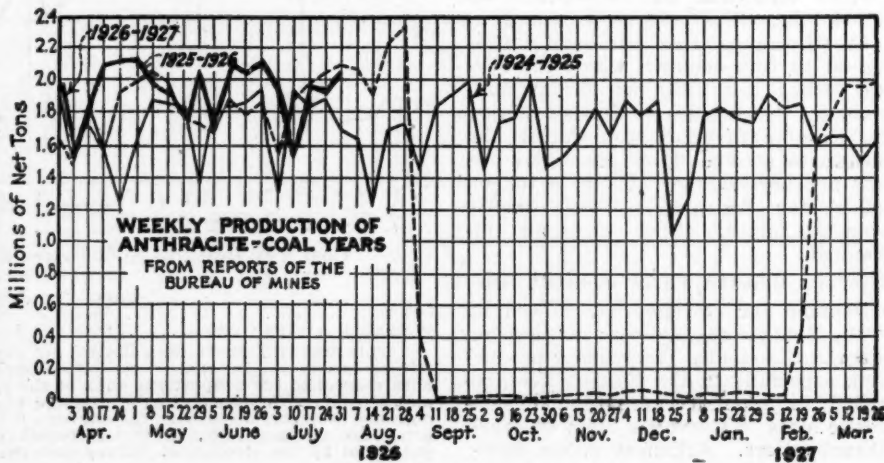
Firmer Note at New York

A distinctly firmer note appeared in the bituminous coal market at New York last week. Demand improved, inquiries were more frequent and indications pointed to a renewal of activity, with better prices in early September. Good coals show more strength. Railroad buying continues heavy and slack is scarce as a result of heavy buying by cement manufacturers.

Tonnage is moving more freely at Philadelphia and is expected to gain gradually. Shippers continue to complain, however, that business is not at all profitable. High-volatile slack is more plentiful and with cement mills going close to capacity and storing for winter, an outlet is being found for heavy tonnages. Export business, too, is maintaining its recent spurt.

At Baltimore July was the biggest coal export month since 1920, exceeding 565,000 tons cargo and around 65,000 tons in bunkers. There is no indication of a let-up in this coal movement. Gas coals, which are becoming pretty well sold up in the export movement, show more strength than steam coals, but even these, with the exception of Youghiogheny, which is now \$1.75, can be had at very reasonable rates. High-grade West Virginia gas is still available at \$1.35@1.50 in considerable lots on export. Demand for local consumption is moribund.

Increased inquiry for steam coal is reported in the Birmingham spot market, but new business taken on has not been sufficient to prove of any mate-



Car Loadings and Supply

	Cars Loaded		Cars	
	All	Coal	All	Coal
Week ended July 31, 1926.....	1,102,590	192,609		
Week ended July 24, 1926.....	1,085,450	185,258		
Preceding week.....	1,083,626	183,486		
Week ended July 25, 1925.....	1,029,603	178,030		
	Surplus Cars		Car Shortages	
	All	Coal	All	Coal
July 23, 1926.....	218,627	64,922		
July 15, 1926.....	235,839	70,935		
July 22, 1925.....	296,743	101,542		

rial benefit to the trade. Several of the larger railroads, however, have begun to build up reserves. As consumers' stocks in general are low, very little coal is being produced in advance of disposition, price stability is being unusually well maintained and in all other respects basic conditions are sound. A well sustained demand is expected when active buying starts. There has been some improvement in demand for domestic sizes. Spot foundry coke demand is good, with egg at \$4.50@5 and nut \$3.50@4.

Hard Coal Firmer at New York

Demand for anthracite picked up at New York last week and independent coals brought slightly higher prices. Stove remained at the top of the list in demand, with chestnut commanding a much better position and selling nearly as well as egg. Steam grades are in much better shape. Buckwheat No. 1 is in heavier demand and there has been a slight strengthening in rice and barley.

The Philadelphia hard-coal market gained nothing in strength last week. Independent producers are still losing a few days a week, although company mines hardly average more than one day loss each week. Local retail yards are stocked close to capacity, partic-

ularly with nut, as many dealers have taken advantage of the special prices and extended credits offered on blocks of this size. Pea is becoming something of a problem, especially with the independent shippers, who now have a surplus. Company shippers still claim they are placing every ton of it, but with more difficulty. Steam sizes are extremely quiet.

Extremely warm weather at Baltimore has completely diverted attention from the hard-coal market.

The Buffalo anthracite market is pretty flat. The custom house has ceased collecting lake statistics, making it necessary to do this work independently. Loadings in the week ended Aug. 5 were 105,800 tons, of which 56,600 tons cleared for Duluth and Superior, 19,500 tons for Sheboygan, 16,400 tons for Milwaukee and 13,300 tons for Chicago. For July the total was 431,500 tons and for the same month last season, 218,900 tons. The amount for the season was 1,074,800 tons, as against 1,205,864 tons to date last season.

Connellsville Spot Prices Soften

Spot coke in the Connellsville market softened a little last week with an occasional sale, not representative, of furnace coke at \$2.75. The spot furnace coke market in general remains quotable at \$2.85@3. Likewise a few lots of foundry coke have gone at special prices, but the market for standard grade remains quotable, as for a long time past, at \$4@4.50.

Although the steel industry continues active two merchant furnaces using purchased coke recently suspended, but it does not appear that the coke thus released is being forced on the market. One or two other merchant furnaces using Connellsville coke are expected to go out within a few weeks.

Production in the Connellsville and

Lower Connellsville region during the week ended July 31 was 118,990 tons, according to the Connellsville Courier. Compared with the preceding week this was an increase of 6,040 tons. Furnace-oven output was 62,100 tons, an increase of 7,900 tons. Merchant-oven production was 56,890 tons, a decrease of 1,860 tons.

Traffic News

Urge Lower Rate on Idaho Coal

Chambers of commerce, boosters' clubs and the State Grange of Idaho have instituted a series of mass meetings throughout the state to arouse public sentiment in favor of a petition to the state Public Utility Commission asking lower rates on Idaho coal. H. F. Samuels, president of the Teton Coal Co. and a member of the Grange, has been the chief spokesman in urging support of the request that the Oregon Short Line be ordered to put into effect "a reasonable freight rate on Idaho coal, which will be a benefit to everybody—even the railroad."

The Jersey Central Power & Light Co. has filed complaint with the Interstate Commerce Commission against rates on coal from points in the anthracite field and from bituminous coal-producing points in West Virginia and Pennsylvania.

Questions involved in the case of the Washington Coal Producers' Association versus the Union Pacific Railroad Co. will be considered at an Interstate Commerce Commission hearing to be held in Seattle, Wash., Sept. 15. Examiner Weems will preside.

Tonnage and Value of Anthracite Shipped During 1925, By Regions and Sizes

(Compiled by U. S. Bureau of Mines)

Size	Lehigh Region				Schuylkill Region				Wyoming Region				Sullivan Co.		Total	Per Cent of Total
	Breakers	Washeries	Dredges		Breakers	Washeries	Dredges		Breakers	Washeries	Dredges		Breakers			
Lump.....	Gross tons..	0	0	0	4,693	0	0	0	0	0	0	0	0	0	4,693	0
	Total value..	0	0	0	\$41,545	0	0	0	0	0	0	0	0	0	\$41,545	
	Avg. value..	0	0	0	\$8.85	0	0	0	0	0	0	0	0	0	\$8.85	
Broken.....	Gross tons..	72,172	0	0	191,372	0	0	0	967,076	206	0	392	1,231,218	2.6		
	Total value..	\$580,028	0	0	\$1,658,867	0	0	0	\$7,528,755	\$1,884	0	\$3,345	\$9,772,879			
	Avg. value..	\$8.04	0	0	\$8.67	0	0	0	\$7.78	\$9.15	0	\$8.53	\$7.94			
Egg.....	Gross tons..	739,665	4,504	0	1,315,033	3,556	0	0	4,246,372	11,598	0	9,181	6,329,909	13.2		
	Total value..	\$6,368,442	\$39,625	0	\$11,339,571	\$29,337	0	0	\$35,134,773	\$99,735	0	\$77,668	\$53,089,161			
	Avg. value..	\$8.61	\$8.80	0	\$8.62	\$8.25	0	0	\$8.27	\$8.60	0	\$8.46	\$8.39			
Stove.....	Gross tons..	1,419,865	6,299	0	2,950,120	8,641	0	0	6,961,585	11,410	0	17,881	11,375,801	23.7		
	Total value..	\$12,806,296	\$57,708	0	\$26,728,563	\$74,772	0	0	\$60,072,171	\$106,823	0	\$152,588	\$99,998,921			
	Avg. value..	\$9.02	\$9.16	0	\$9.06	\$8.65	0	0	\$8.63	\$9.36	0	\$8.53	\$8.79			
Chestnut.....	Gross tons..	1,737,574	10,974	0	3,293,549	33,558	0	0	7,409,369	68,723	0	23,351	12,577,098	26.2		
	Total value..	\$15,028,502	\$94,522	0	\$28,821,979	\$275,518	0	0	\$61,592,759	\$566,887	0	\$202,141	\$106,582,308			
	Avg. value..	\$8.65	\$8.61	0	\$8.75	\$8.21	0	0	\$8.31	\$8.25	0	\$8.66	\$8.47			
Pea.....	Gross tons..	478,830	12,745	0	985,863	33,006	1,064	0	1,131,983	26,813	0	12,068	2,682,372	5.6		
	Total value..	\$2,622,304	\$67,965	0	\$5,232,607	\$159,357	\$4,025	0	\$5,820,402	\$136,790	0	\$60,409	\$14,103,859			
	Avg. value..	\$5.48	\$5.33	0	\$5.30	\$4.83	\$3.78	0	\$5.14	\$5.10	0	\$5.01	\$5.26			
Buckwheat No. 1	Gross tons..	827,500	25,972	0	1,906,688	75,362	6,963	0	3,040,528	38,072	0	0	5,921,075	12.3		
	Total value..	\$2,096,334	\$61,238	0	\$4,542,544	\$164,000	\$17,286	0	\$7,756,901	\$96,038	0	0	\$14,734,341			
	Avg. value..	\$2.53	\$2.36	0	\$2.38	\$2.18	\$2.49	0	\$2.55	\$2.52	0	0	\$2.49			
Buckwheat No. 2	Gross tons..	492,854	30,362	0	1,043,630	84,905	0	0	1,934,885	84,906	0	0	3,671,542	7.6		
Rice and Birdseye	Total value..	\$948,220	\$60,974	0	\$1,868,490	\$150,274	0	0	\$3,583,783	\$157,306	0	0	\$6,769,047			
	Avg. value..	\$1.92	\$2.01	0	\$1.79	\$1.77	0	0	\$1.85	\$1.85	0	0	\$1.84			
Buckwheat No. 3 and Barley	Gross tons..	551,760	83,631	52,765	1,381,460	141,627	169,073	0	949,849	65,526	0	0	3,395,691	7.1		
	Total value..	\$800,207	\$125,448	\$58,042	\$1,691,372	\$188,667	\$166,954	0	\$1,310,332	\$90,423	0	0	\$4,431,445			
	Avg. value..	\$1.45	\$1.50	\$1.10	\$1.22	\$1.33	\$0.99	0	\$1.38	\$1.38	0	0	\$1.31			
Boiler.....	Gross tons..	1,152	0	36,176	21	0	26,178	0	34,304	0	0	0	97,831	0.2		
	Total value..	\$3,122	0	\$28,941	\$29	0	\$26,950	0	\$43,473	0	0	0	\$102,515			
	Avg. value..	\$2.71	0	\$0.80	\$1.39	0	\$1.03	0	\$1.27	0	0	0	\$1.05			
Other a.....	Gross tons..	134,260	0	0	135,077	92	162,974	0	171,675	9,788	64,593	41,786	720,245	1.5		
	Total value..	\$67,686	0	0	\$52,003	\$40	\$167,054	0	\$513,678	\$7,337	\$67,823	\$78,082	\$953,703			
	Avg. value..	\$0.50	0	0	\$0.38	\$0.43	\$1.03	0	\$2.99	\$0.75	\$1.05	\$1.87	\$1.32			
Total.....	Gross tons..	6,455,632	174,487	88,941	13,207,506	380,747	366,242	0	26,847,626	317,042	64,593	104,659	4,007,475	100.0		
	Total value..	\$41,321,141	\$507,480	\$86,983	\$81,977,570	\$1,041,965	\$382,269	0	\$183,357,027	\$1,263,233	\$67,823	\$574,233	\$310,579,724			
	Avg. value..	\$6.40	\$2.91	\$0.98	\$6.21	\$2.74	\$1.04	0	\$6.83	\$3.98	\$1.05	\$5.49	\$6.47			

a Includes No. 4 buckwheat, silt, culm, screenings and mine-run coal.

Foreign Market And Export News

French Coal Prices Advance as Demand Exceeds Supply

Paris, July 22.—Though prices are rising steadily in the French coal market, offerings are unequal to demand. Domestic consumption is almost nil and retailers are slow in refilling their yards. The French collieries are delivering only 60 to 95 per cent of tonnages outstanding on contracts.

It is considered likely that prices will be further advanced Aug. 15 when the wage convention matures in the Nord and Pas-de-Calais, as well as in the rest of France.

A heavy advance in Belgian sized coals also is expected on Aug. 1, but as there is some confusion in the ranks of the mine owners the exact figure is uncertain. Very little anthracite is coming from Holland and as it is invoiced in florins it amounts to a luxury.

During the first ten days of July, the O.H.S. received from the Ruhr 70,300 tons of coal, 78,500 tons of coke and 13,200 tons of lignite briquets, a total of 162,000 tons. During the first twenty days of July the O.R.C.A. received from the Ruhr 153,233 tons of coke. Conversations between German coke producers and French metallurgists will begin early in August.

Reparation sized-coals were advanced 19 to 35 fr. on July 16 at Jeumont-Givet and Lauterbourg.

Fuel imports into France in June, 1926, included 1,087,717 metric tons of coal, 481,210 tons of coke and 83,375 tons of patent fuel. Total imports for the first six months of 1926 were: Coal, 8,492,630 metric tons; coke, 2,813,367 tons; patent fuel, 605,528 tons. Exports in June comprised 375,338 tons of coal, 48,620 tons of coke and 19,114 tons of patent fuel, totals for six months being 2,256,435, 261,536 and 124,057 tons, respectively.

Belgian Market Unsteady; May Limit Exports

Brussels, July 25.—Due to violent fluctuations in the franc, the Belgian coal market is very unsteady. Further unsettlement has been caused by the British strike. Some mine owners are making quotations in sterling to foreign buyers, which has raised a storm of protests from other operators who consider the practice antipatriotic.

Prices hitherto unknown are being asked for industrial grades, chiefly the sorts necessary to open-air industries. Contracts are only partly filled and qualities in some instances are unsatisfactory, but buyers fear to seek redress lest their supplies be cut off.

Export demand for domestic grades is lively and anthracitic nuts easily bring 350 fr.

The coal supply is not yet short but a royal decree of July 24 provides for the limitation and regulation of ex-

ports if the government deems it necessary. The government and mine delegates have discussed price fixing of household grades and agree in principle on a tentative price schedule 20 to 25 per cent under the international market and 15 per cent under French quotations.

According to the "Convention des Gailleteries," prices of sized Belgian coals for the Paris region were to be revised on July 13, the new schedules to become effective Aug. 1. Although the producers met for that purpose, their decision is still unknown. An advance of 50 fr. is expected. Briquets cost 220@225 fr. Cokes are advancing rapidly; the ordinary Belgian metallurgical grade easily sells at 185@190 fr., although the official rate is only 175 fr.

If the new index number—to be known on the 25th—justifies a further advance in wages of 5 per cent, the increase will go into force on Aug. 1.

The United States imported 30,120 tons of bituminous coal last month, compared with 27,507 tons in May. Anthracite imports, chiefly from Great Britain, dropped from 8,227 tons to 4,985 tons. Coke imports were 7,791 tons, compared with 14,347 tons in May. Canada, Germany and the Netherlands were the sources of the coke importations.

Export Clearances, Week Ended Aug. 5

FOR HAMPTON ROADS	
For United Kingdom:	Tons
Grk. Str. Atlantis.....	7,586
Ital. Str. Adamello.....	7,936
Br. Str. Medjerda.....	6,718
Nor. Str. Earle.....	7,711
Br. Str. Clantonla.....	4,934
Br. Str. Queen Olga.....	7,497
Br. Str. Barrington Court.....	7,202
Du. Str. Winterswijk.....	4,611
Br. Str. Ainderby.....	7,965
Swed. Str. Atländ.....	7,142
Jugoslav. Str. Jaders.....	6,041
Span. Str. Fernando.....	5,827
Span. Str. Maria Victoria.....	4,624
Fr. Str. Emmy L. D.....	4,667
Br. Str. Shandon.....	4,712
Br. Str. Lady Charlotte.....	6,652
Br. Str. Arlington Court.....	7,202
Span. Str. Gorbear Mendi.....	5,683
Ger. Str. Braza.....	5,311
Br. Str. Levnet.....	4,948
Nor. Str. Orla.....	6,356
Ital. Str. Messicano.....	5,949
Ital. Str. Orsa.....	7,417
Ital. Str. Andalusia.....	6,320
Ital. Str. Ardito.....	7,761
Br. Str. Diplomati.....	8,720
Br. Str. Cape Comorin.....	2,211
Br. Str. Anglo Mexican.....	7,488
For Scotland:	
Br. Str. Trellissick, for Glasgow.....	7,275
Ger. Str. Anna Kayser, for Glasgow.....	6,501
Br. Str. Novian, for Glasgow.....	8,488
For England:	
Br. Str. Duns Law, for Mersey River.....	5,278
Nor. Str. Landaaas, for Avonmouth.....	7,232
Br. Str. Tenburg, for Newcastle.....	6,170
Br. Str. Monkton, for Manchester.....	4,757
Nor. Str. Jethow, for Birkenhead.....	6,261
For Brazil:	
Fr. Str. Port de Dunkerque, for Rio de Janeiro.....	6,253
Br. Str. North Devon, for Pernambuco.....	5,471
For Cuba:	
Nor. Str. Thorgerd, for Havana.....	3,730
For Argentina:	
Br. Str. Ravenshoe, for Buenos Aires.....	5,908

Br. Str. Treneglos, for Buenos Aires.....	6,281
Amer. Str. West Celine, for Buenos Aires.....	5,282
For Egypt:	
Br. Str. Langton Hall, for Port Said.....	2,170
For Cape Verde Islands:	
Amer. Str. Commercial Trader, for St. Vincent.....	7,028
Br. Str. Antonio, for St. Vincent.....	7,218
For Canary Islands:	
Br. Str. Glenbridge, for Teneriffe.....	5,713
For Italy:	
Br. Str. Mrav, for Naples.....	5,222
For Spain:	
Br. Str. Admiral Hamilton, for Gibraltar.....	4,125
For Newfoundland:	
Nor. Str. Mathilda, for Cornerbrook.....	5,756

FROM BALTIMORE

For England:	
Dan. Str. Nordfarer, for Land's End for orders.....	5,764
Br. Str. Swamby, for Manchester.....	7,971
Br. Str. Rathlin Head.....	8,040
Span. Str. Abodi Mendi.....	7,602
Br. Str. Llamberis.....	5,689
Jap. Str. Thames Maru.....	7,524
Span. Str. Arnotegi Mendi.....	4,600
Span. Str. Ordeunte Mendi.....	5,139
Br. Str. Pilton.....	4,704
Br. Str. Raclo.....	6,012
For Ireland:	
Nor. Str. Lisbeth, for Belfast.....	3,928
Br. Str. Orangemoor, for Queenstown for orders for England.....	7,819
Ger. Str. Karpfanger, for Queenstown for orders to England.....	8,492
Dut. Str. Admiral De Ruyter, for Queenstown for orders to England.....	7,543
Ger. Str. Mimi, for Queenstown for orders to England.....	5,506
Br. Str. Amblesstone, for Queenstown for orders to England.....	7,625
Span. Str. Zaballbide, for Queens-town for orders to England.....	4,613
Br. Str. Baron Forbes, for Queens-town for orders to England.....	3,992
For Italy:	
Ital. Str. Aurania.....	7,019
Ital. Str. Giovanni, for Genoa.....	10,140
For Argentina:	
Br. Str. Doverton, for Buenos Aires.....	5,115
For Gibraltar:	
Br. Str. Cheswick, for orders.....	4,627
For Chile:	
Br. Str. Cheniston, for San Antonio (coke).....	2,888

FROM PHILADELPHIA

For Great Britain:	
Dan. Str. Fredensbro, for Belfast.....	—
Dutch Str. Jobshaven, for Queens-town.....	—
Span. Str. Altobiskar Mendi, for River Mersey.....	—
For Spain:	
Span. Str. Cabo Santa Maria, for Seville.....	—
For Trinidad:	
Nor. Str. Fram, for Port of Spain.....	—

Hampton Roads Coal Dumpings*

(In Gross Tons)	
N. & W. Piers, Lamberts Pt.: July 29.....	Aug. 5 ¹
Tons dumped for week.....	305,023 276,815
Virginian Piers, Sewalls Pt.: July 29.....	Aug. 5 ¹
Tons dumped for week.....	189,997 210,254
C. & O. Piers, Newport News: July 29.....	Aug. 5 ¹
Tons dumped for week.....	224,238 226,185

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS	
	July 31
Pool 1, New York.....	\$5.40@ \$5.65
Pool 9, New York.....	4.90@ 5.10
Pool 10, New York.....	4.60@ 4.85
Pool 11, New York.....	4.35@ 4.50
Pool 9, Philadelphia.....	4.85@ 5.20
Pool 10, Philadelphia.....	4.60@ 4.85
Pool 11, Philadelphia.....	4.30@ 4.55
Pool 1, Hamp. Roads.....	4.65@ 4.75
Pool 2, Hamp. Roads.....	4.45@ 4.55
Pool 3, Hamp. Roads.....	4.20@ 4.30
Pools 5-6-7, Hamp. Rds.....	4.35 4.30
BUNKERS	
Pool 1, New York.....	\$5.65@ \$5.90
Pool 9, New York.....	5.15@ 5.35
Pool 10, New York.....	4.85@ 5.10
Pool 11, New York.....	4.60@ 4.75
Pool 9, Philadelphia.....	5.10@ 5.35
Pool 10, Philadelphia.....	4.90@ 5.10
Pool 11, Philadelphia.....	4.55@ 4.85
Pool 1, Hamp. Roads.....	4.75 4.65
Pool 2, Hamp. Roads.....	4.55 4.40
Pools 5-6-7, Hamp. Rds.....	4.45 4.30

†Advances over previous week shown in heavy type; declines in italics.

Coming Meetings

Fourth Annual West Virginia First-Aid Contest and First Annual Safety Day, Camden Park, Huntington, W. Va., Aug. 21. Managing Director, W. H. Forbes, Federal Building, Huntington.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under auspices of Bureau of Mines, Department of Commerce.

New York State Coal Merchants Association. United States Hotel, Saratoga Springs, N. Y., Sept. 2-4. Executive secretary, G. W. F. Woodside, Dolan Bldg., Albany, N. Y.

Rocky Mountain Coal Mining Institute. Glenwood Springs, Colo., Sept. 9-11. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

American Institute of Mining and Metallurgical Engineers. Oct. 6-9, at Pittsburgh, Pa. Secretary, H. Foster Bain, 29 West 39th St., New York City.

National Safety Council. Oct. 25-29, at Detroit, Mich. Managing director, W. H. Cameron, 108 East Ohio St., Chicago, Ill.

National Industrial Traffic League. Commodore Hotel, New York City, Nov. 17 and 18. Executive secretary, J. W. Beek, Chicago, Ill.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

Industrial Notes

John D. Crawbuck, who for eighteen years was associated with the Miller-Owen Electric Co., Pittsburgh, Pa., has sold his interest in that organization. It is Mr. Crawbuck's intention to continue in the same general line, probably specializing in heavier equipment, liquidation of plants, etc., with headquarters in Pittsburgh. His present address is 1440 Severn St., Pittsburgh, Pa.

The Osgood Company, Marion, Ohio, has purchased from the receiver of the Fairbanks Steam Shovel Co., at Marion, Ohio, the good will and all the assets of the Fairbanks company, together with the entire stock of material that was on hand for the manufacture of steam and gas shovels and dredges. Charles Melvin, who was connected with the Fairbanks company for twenty-four years, has been retained by the Osgood Company and placed in charge of the department for handling service and repair parts on Fairbanks machines.

The Kuhlman Electric Co., Bay City, Mich., manufacturers of power, distribution and street-lighting transformers, announces the appointment of the Continental Sales & Engineering Co., 839 Oliver Building, Pittsburgh, Pa., as district representative in that field. E. J. Hughes is manager of the Continental company.

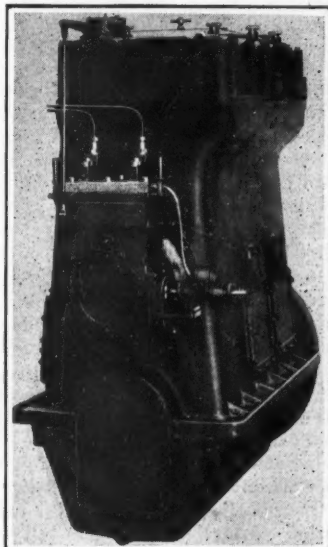
The Climax Engineering Co., Clinton, Iowa, announces the appointment of H. J. McClenahan & Co., 615 Water Street, Baltimore, Md., as official parts and service station for Climax engines.

New Equipment

Diesel-Cycle Oil Engine An Efficient Standby

A Diesel oil engine that will serve for standby purposes and designated Type L by its manufacturer, the Foos Gas Engine Co., of Springfield, Ohio, is shown in the accompanying illustration. Though it embodies certain details of design peculiar to itself, it, in general, is a reproduction in miniature of an earlier slow-speed type, which, in severe power-plant service, is said to have proved already the correctness of its design.

The new engine is a vertical multi-cylinder machine operating on the full Diesel four-stroke cycle with airless injection of fuel. It is completely inclosed, the only moving part visible



Control End of Two-Cylinder Diesel Cycle Oil Engine

This machine is provided with the marine base. The stationary base, which is somewhat better suited to mounting on a concrete foundation, extends downward from the side flanges. The type of base naturally has no effect whatever upon the operation or efficiency of the engine. All parts despite complete closure are readily accessible.

being the flange coupling to which the driven machinery is connected. A large reduction in weight per unit of power has been effected. The new unit weighs from 30 to 60 lb. per horsepower, as compared with 175 to 300 lb. per horsepower in the larger machines. The speed obtainable ranges up to 900 r.p.m., making the new machine highly flexible and suitable for many types of application. As is well known, the efficiency of the Diesel engine is higher than that of any other internal-combustion machine, and this high efficiency, as well as the low cost of the fuel burned, assures an economical standby unit.

Complete inclosure assures successful operation in all places where dust is liable to be encountered. Although

this protection prevents foreign matter from reaching the bearings or other moving parts, the new machine is accessible for inspection or repair. Large cover plates are provided on both sides opposite the crank throws, giving access to the lower portion of the main cylinder frame. The top of the engine is provided with light cover plates that may be lifted off for inspection of the heads, valves, and valve mechanism.

LUBRICATION IS FORCED

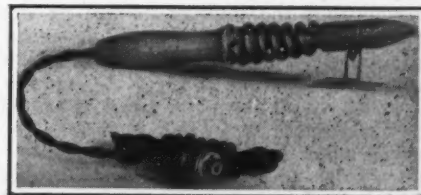
Lubrication is automatic, all moving parts being furnished with oil by a pump driven from the crankshaft. This draws oil from a reservoir in the bottom of the base and forces it under pressure to all moving parts of the machine. No grease or oil cups are used.

Among the advantages claimed by the maker of this machine are: The engine develops the full efficiency of the Diesel cycle; all moving parts are inclosed; all bearings receive forced lubrication; the machine is small for its rating; all working parts are unusually accessible, and the strength of the structure and the size of working parts are ample to afford dependability and long life. The machine as a whole is extremely simple, being less complicated than an ordinary gasoline engine. The design is symmetrical, substantial and attractive.

This machine is built with bases of two shapes, namely, the marine type for installation where headroom is at a premium, and the stationary type. Either variety may be connected by a belt or chain with a generator, or other machine or, if so desired, a generator or other equipment to be driven may be direct-connected to the flange of the coupling.

Electric Soldering Iron for Discontinuous Use

A light-weight soldering iron designed to heat up quickly and made in standard sizes ranging from 1/4-in. to 1 1/4-in. tip is a new product of the General Electric Co., Schenectady, N. Y. Power consumption ranges from 70 watts for the smaller iron to 350 watts for the larger size. The irons for heavy duty are provided with radiating stands for the purpose of maintaining the iron at the correct operating temper-



Soldering Iron Heats Quickly

Insulating powder is used instead of mica. It does however pass heat freely when compressed and will endure high temperatures.

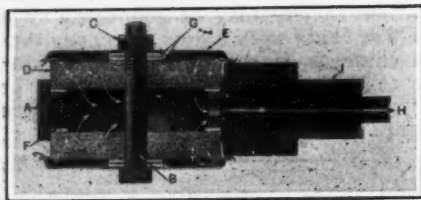
ature when temporarily not in use. Heat from the copper tip is prevented from reaching the handle by means of a spiral made from steel rods. Instead of the mica that is generally used as an insulator, an insulating powder is used, so highly compressed that it becomes a good heat conductor and will withstand temperatures of more than 2,000 deg. F.

Non-Slagging Gas Filter for Flue-Gas Analysis

Filtration of the sample is unquestionably an important problem in flue-gas analysis. For certain applications, the standard filter is unsuitable, because of the impingement and slagging action of incandescent particles of ash on the filtering disks. This is prevented and the filtering elements protected indefinitely by means of metal shields applied to a new special Pyro-porus filter, a cross-section of which is shown in the accompanying illustration. The arrows indicate the course of the gas flow through the porous disks D.

The shields that protect these filtering elements against direct impingement of molten particles are marked E. Disks and shields are held together by a bolt B and nut C, the tightness of the joints being assured by the asbestos gaskets G and F. The weight of the filter casting A is supported in the furnace by pipe J, the gas being conducted away at high velocity through the smaller pipe H within it.

This filter is made by the Uehling Instrument Co., 473 Getty Ave., Paterson, N. J. The manufacturer guarantees it to operate effectively under any conditions between 200 and 1,400 deg. F. For higher temperatures, other special features are necessary.



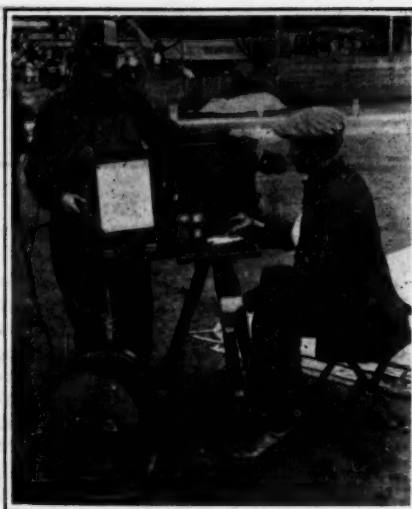
Filtering Disks Are Protected

The filtering elements or disks are protected from the impingement of molten ash particles by means of metal shields. The whole device is held together by means of one bolt.

Life Line Transmits Voice And Buzzer Signals

Use of breathing apparatus in case of mine disaster usually precludes communication of the rescue party with the surface by telephone, for the obvious reason that the oxygen helmet or the mouthpiece interferes with speaking into the instrument. Thus although a telephone instrument may be readily attached to the ear of some member of the rescue party and messages received, none may be returned.

In order to overcome this difficulty Homer Blair, a miner in the employ of the Pacific Coast Coal Co., at Burnett, Wash., has invented and built a signaling life line. Both telephone and buz-



Leader, Operator and Equipment

The life line into which the necessary telephone and signal wires are twisted or woven pays out from a reel located at the base of operations. The leader of the rescue crew wears a telephone receiver at his ear and carries a buzzer button in his hand. Communication is thus carried on by means of the telephone in one direction and the buzzer by code of signals in the other.

zer wires are twisted into this rope. A telephone receiver is worn by the leader of a rescue party and a buzzer button carried in the hand, both of which are attached to suitable conductors within the life line which is dragged out from a reel as the party proceeds. On the surface or at the base of operations a telephone transmitter is set up with the necessary batteries and a buzzer. By this means communication can be maintained between the man at the base and the rescue party, the telephone sufficing in one direction, and code signals through the buzzer serving in the other.

Patent covering this device has been applied for. It was given a public demonstration at a recent first-aid meet at Burnett in the presence of mine officials from both Washington and British Columbia as well as representatives of the U. S. Bureau of Mines. Upon this occasion the equipment worked perfectly and those in the rescue party had no difficulty in keeping in perfect communication with the man at the base of operations. It is claimed that this "signaling life line" overcomes all objection to the use of electrical devices within the mines after an explosion or during the course of a fire and that it will accordingly fill a long felt need in the coal-producing industry.

This Tracing Paper Is White And Odorless

The tracing paper now being manufactured by the Special Paper Manufacturing Co., 96 Reade St., New York, is said to overcome two objectionable features characteristic of many vellums. The product is absolutely odorless and of a white texture. Claims made for the paper, which is known as "Vellux," are that the odorless feature adds to the efficiency of the draftsman and that a white paper gives much better blueprints than does a yellow.

Trade Literature

Handy Hoisting and Hauling. Sullivan Machinery Co., Chicago, Ill. Booklet No. 132. Pp. 15; 8½x11 in.; illustrated. The use of turbinair and electric portable hoists as car pullers and drag-line scrapers is illustrated and described, as are also many other uses to which these hoists are applicable.

Helical Gears are described in a leaflet issued by the De Laval Steam Turbine Co., Trenton, N. J.

Portable Air Compressors. Sullivan Machinery Co., Chicago, Ill. Bulletin No. 83-D. Pp. 31; 6x9 in.; illustrated. Describes three distinct types of portable air compressors: WK-312 and WK-314, gasoline engine-driven; WK-34, belt-driven from a tractor, and WK-32, driven by belt from an electric motor. These types include a capacity range from 110 to 320 cu ft.

General Electric Co., Schenectady, N. Y., has issued the following leaflets: GEA-399, illustrating and describing its **A-c Switchboards with Knife Switches and Air Circuit Breakers** for small central stations and isolated plants; GEA-319 on **Outdoor Station Equipment, Separable Post Type Insulators** for use on switching equipments of 88,000 to 220,000 volts; GEA-185, **CR-1049 Manual Contactors** for a.c. or d.c. motors; GEA-135, describing its **2300-Volt, 90-Inch A-C Switchboards**.

Natural-Bonded Molding Sand Resources of Illinois, by M. S. Littlefield. Department of Registration and Education, Division of the State Geological Survey, Urbana, Ill. Laboratory tests in co-operation with the Engineering Experiment Station, University of Illinois. Bulletin No. 50. Pp. 183; 7x10 in.; illustrated.

Truscon Roofs of Security. Truscon Steel Co., Youngstown, Ohio. Pp. 7; 8½x11 in.; illustrated. Describes the "Ferrodock" and "I-Plates" types of steel deck roofs.

Carnegie Steel Co., Pittsburgh, Pa., has issued the following two books: **Structural Steel Shapes**, containing information and tables for engineers and designers, and **Light Weight Wrought Steel Wheels for Freight Car Service**. The former has 195 pp. and the latter 7; both illustrated and measure 5x7½ in.

American H. S. Fans, Class 15M. American Blower Co., Detroit, Mich. Bulletin No. 7003. Pp. 27; 8½x11 in.; illustrated. Contains curves covering the characteristics of these fans, specification sheets describing and illustrating the various parts of a complete forced draft blower, capacity tables and dimension sheets in detail of all the standard arrangements.

C-E Unit System for Burning Pulverized Fuel. Combustion Engineering Corp., New York City. Catalog U-2. Pp. 23; 8½x11 in.; illustrated. Describes the construction of the mill, method of operation and furnace design.

The Hays Corp., Michigan City, Ind., has issued a folder illustrating and describing its new line of **Pointer Gages for Draft, Pressure and Differentials**.